Service Manual

Pioneer

TOYOTA

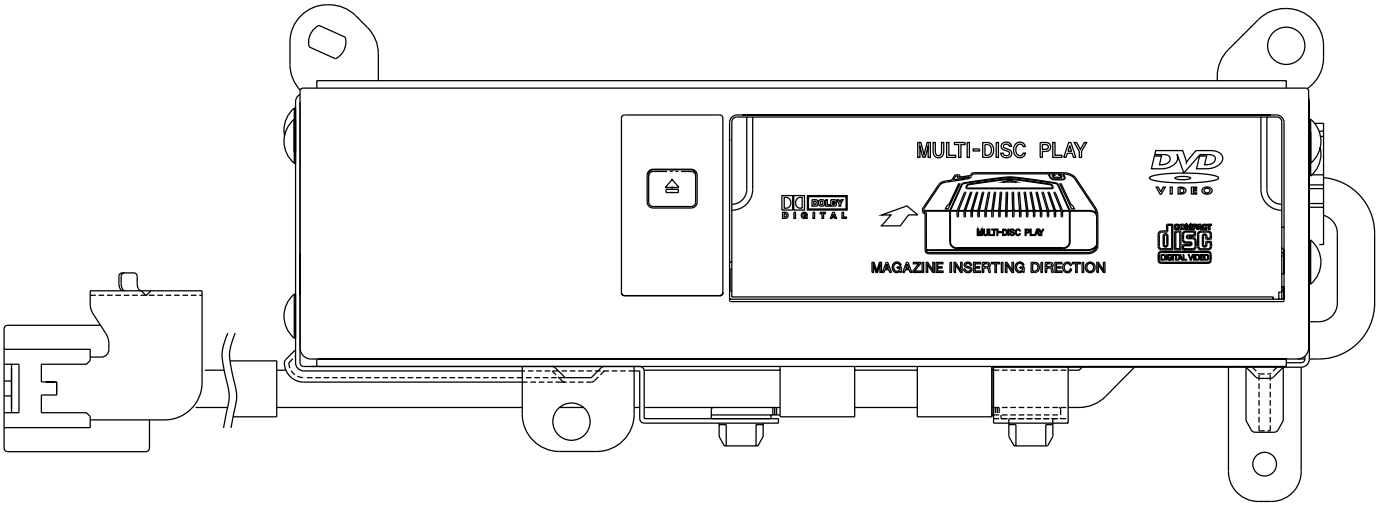
ORDER NO.
CRT2537

LAND CRUISER
LEXUS LX470
AUDIO SYSTEM
DVD/CD COMPATIBLE CHANGER

VEHICLE	DESTINATION	PRODUCED AFTER	TOYOTA PART No.	ID No.	PIONEER MODEL No.
LEXUS LX470	U.S.A., CANADA	August 2000	86275-60010	———	XDV-M8106ZT/UC
LAND CRUISER			86275-60010	———	XDV-M8106ZT-91/UC

Manufactured for TOYOTA
by PIONEER CORPORATION

PUB. NO. CRT2537



● **XDV-M8106ZT/UC and XDV-M8106ZT-91/UC have adopted AVC-LAN.**

● This service manual should be used together with the following manual(s):

Model No.	Order No.	Mech. Module	Remarks
CX-692	CRT2533	MM-1	DVD/CD Mech. Unit:Circuit Description, Mech.Description, Disassembly

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● Manufactured under license from Digital Theater Systems, Inc.

● **The supplementary models are identical with the original ones except for the following items.**

Description	Part No.
Cover	CEG1026
Carton	CHG3080
Contain Box(1/2)	CHD3080
Protector	CHP2333
Protector	CHP2334
Air Cap	CEG1288(Non Spare Part)

● **DVD Player Service Precautions**

1. Never adjust the LD VR in the pickup unit to protect the pickup from electrical damages.
2. For pickup unit(CGY2020) handling, please refer to"Disassembly"(see page 88).
   During replacement, handling precautions shall be taken to prevent an electrostatic discharge(set the short switch of the pickup unit to the SHORT side).
3. During disassembly, be sure to turn the power off since an internal IC might be destroyed when a connector is plugged or unplugged.
4. Please adjusting the skew after changing the pickup unit(see page 63).

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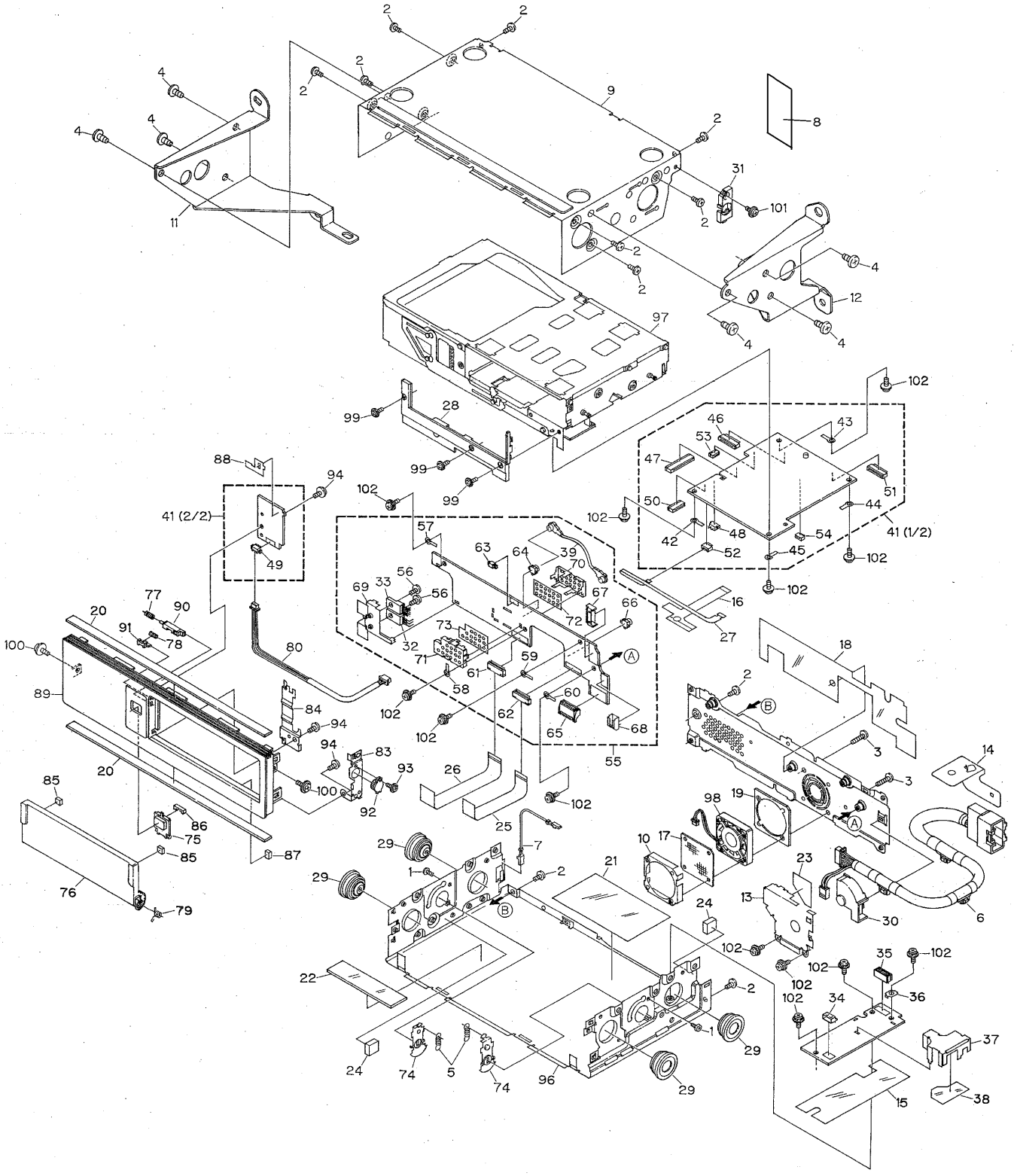
1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer.
Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty.
If you are not qualified to perform the repair of this product properly and safely; you should not risk trying to do so and refer the repair to a qualified service technician.

2. EXPLODED VIEWS AND PARTS LIST

2.1 EXTERIOR



NOTE:

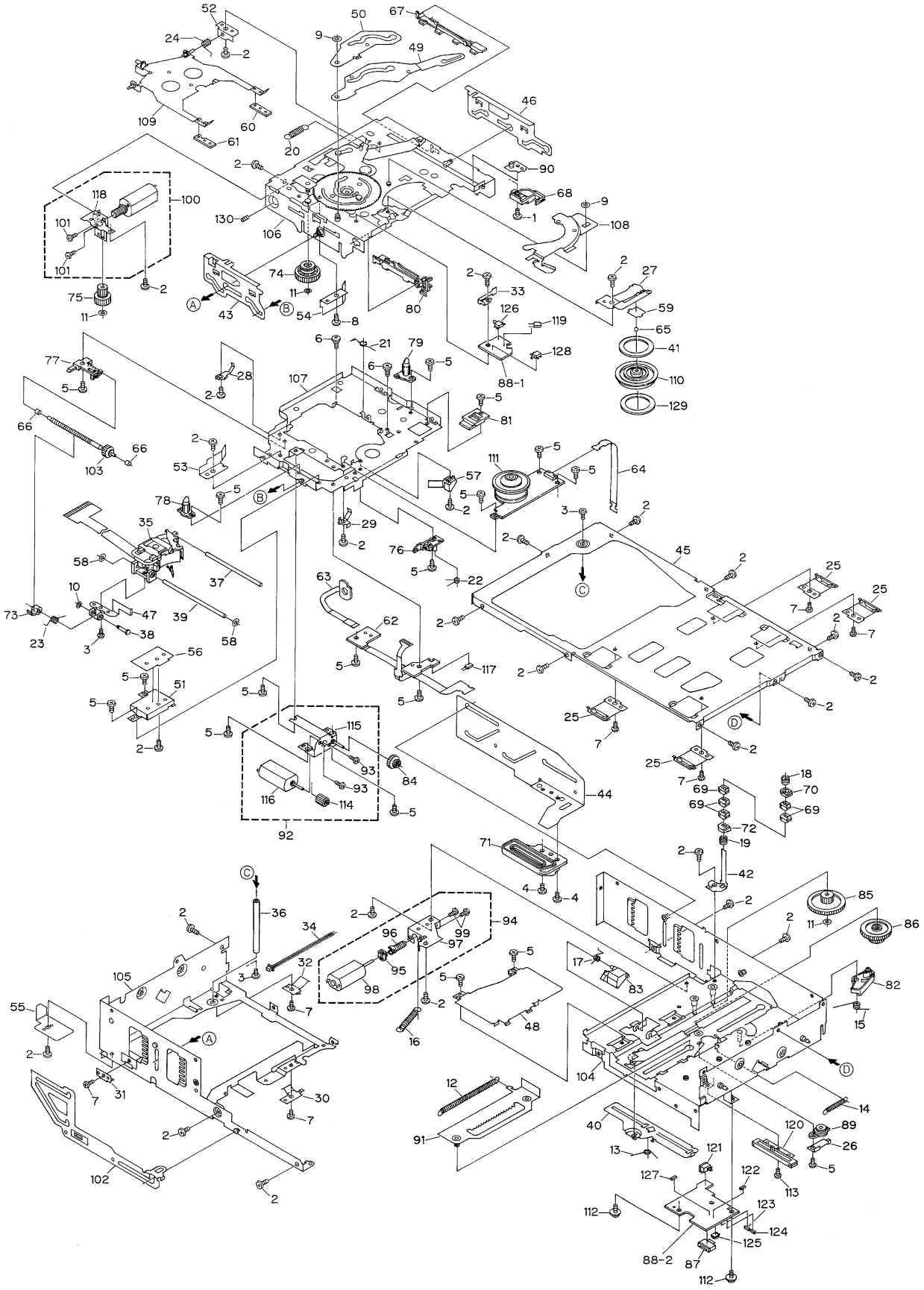
- Parts marked by "*" are generally unavailable because they are not in our Master Spare Parts List.
- Screws adjacent to ∇ mark on the product are used for disassembly.

● EXTERIOR SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Screw	BMZ20P040FMC
	2	Screw	BSZ30P055FMC
	3	Screw(M3x12)	CBA1514
	4	Screw(M5x6)	CBA1517
	5	Spring	CBH2335
	6	Cord Assy	CDE6299
	7	Connector	CDE6302
	8	Tape	CNM7094
	9	Upper Case	CNB2496
	10	Holder	CNC8612
	11	Bracket	CNC8831
	12	Bracket	CNC8832
	13	Shield	CNC9089
	14	Bracket	CNC9122
	15	Insulator	CNM6337
	16	Insulator	CNM6405
	17	Filter	CNM6600
	18	Insulator	CNM6735
	19	Cushion	CNM6736
	20	Cushion	CNM6743
*	21	Insulator	CNM7090
*	22	Insulator	CNM6906
	23	Insulator	CNM6985
	24	Cushion	CNM7037
	25	PCB	CNP5534
	26	PCB	CNP5535
	27	PCB	CNP5604
	28	Panel	CNS6473
	29	Damper	CNV5833
	30	Holder	CNV6181
	31	Holder	CNV6245
	32	IC(IC3821)	BA00AST
	33	Transistor(Q3811)	2SB942A
	34	Plug(CN2903)	CKS1051
	35	Connector(CN2901)	CKS3563
	36	Holder	CNC2218
	37	Shield	CNC8898
	38	Insulator	CNM6836
	39	Cord	CDE6446
	40	•••••	
	41	Main Unit	CWM7156
	42	Terminal(CN1603)	CKF1064
	43	Terminal(CN1604)	CKF1064
	44	Terminal(CN1605)	CKF1064
	45	Terminal(CN1607)	CKF1064
	46	Connector(CN1601)	CKS1953
	47	Connector(CN101)	CKS1964
	48	Connector(CN312)	CKS2191
	49	Connector(CN2000)	CKS2193
	50	Connector(CN302)	CKS3480
	51	Connector(CN1600)	CKS3749
	52	Connector(CN310)	CKS3767
	53	Connector(CN301)	CKS4358
	54	Connector(CN1000)	CKS4374
	55	Extension Unit	CWM7397
	56	Screw	BMZ26P050FMC
	57	Terminal(CN3812)	CKF1064
	58	Terminal(CN3811)	CKF1064
	59	Terminal(CN3813)	CKF1064
	60	Terminal(CN3810)	CKF1064
	61	Connector(CN3951)	CKS1953
	62	Connector(CN3961)	CKS3749
	63	Connector(CN3891)	CKS2191
	64	Connector(CN3301)	CKS2619
	65	Plug(CN3802)	CKS3535
	66	Connector(CN3302)	CKS2619
	67	Connector(CN3801)	CKS4320
	68	Connector(CN3803)	CKS4356
	69	Holder	CNC8400
	70	Shield	CNC8899
	71	Shield	CNC8900
	72	Insulator	CNM6834
	73	Insulator	CNM6835
	74	Arm Unit	CXA8606
	75	Button	CAC6152
	76	Door	CAT2224
	77	Spring	CBH2336
	78	Spring	CBH2337
	79	Spring	CBH2363
	80	Connector	CDE6022

Mark	No.	Description	Part No.
	81	•••••	
	82	•••••	
	83	Holder	CNC8402
	84	Holder	CNC8409
	85	Cushion	CNM6407
	86	Cushion	CNM6842
	87	Cushion	CNM6843
*	88	Insulator	CNM6907
	89	Grille	CNS6472
	90	Lever	CNV5831
	91	Lever	CNV6104
	92	Damper Unit	CXB4206
	93	Screw	IMS20P035FZK
	94	Screw	IMS26P040FMC
	95	Rear Frame Unit	CXB6364
	96	Lower Case Unit	CXB6365
	97	DVD/CD Mechanism Unit(MM-1)	CXK7020
	98	Fan Motor	CXM1154
	99	Screw(M2x3.5)	CBA1532
	100	Screw	IMS30P060FZK
	101	Screw	ISS30P060FMC
	102	Screw	PMB26P060FMC

2.2 DVD/CD MECHANISM UNIT



● DVD/CD MECHANISM UNIT SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Screw	CBA1026
	2	Screw(M2x2.5)	CBA1037
	3	Screw(M2x2.5)	CBA1041
	4	Screw(M2x3.5)	CBA1114
	5	Screw(M2x3)	CBA1154
	6	Screw	CBA1243
	7	Screw(M2x1.4)	CBA1387
	8	Screw	CBA1419
	9	Washer	CBF1002
	10	Washer	CBF1037
	11	Washer	CBF1038
	12	Spring	CBH2368
	13	Spring	CBH1827
	14	Spring	CBH1828
	15	Spring	CBH1829
	16	Spring	CBH1830
	17	Spring	CBH1919
	18	Spring	CBH1930
	19	Spring	CBH2070
	20	Spring	CBH2091
	21	Spring	CBH2159
	22	Spring	CBH2227
	23	Spring	CBH2238
	24	Spring	CBH2279
	25	Spring	CBL1307
	26	Spring	CBL1362
	27	Spring	CBL1388
	28	Spring	CBL1416
	29	Spring	CBL1417
	30	Spring	CBL1418
	31	Spring	CBL1419
	32	Spring	CBL1420
	33	Spring	CBL1422
	34	Connector	CDE6156
	35	PU Unit	CGY2020
	36	Shaft	CLA2803
	37	Shaft	CLA3428
*	38	Shaft	CLA3431
	39	Shaft	CLA3562
	40	Lever	CNC6194
	41	Plate	CNC6847
	42	Holder	CNC7448
	43	Lever	CNC7975
	44	Lever	CNC8065
	45	Frame	CNC8068
	46	Lever	CNC8097
	47	Bracket	CNC8106
	48	Cover	CNC8129
	49	Arm	CNC8335
	50	Arm	CNC8336
*	51	Cover	CNC8347
	52	Holder	CNC8476
	53	Cover	CNC8921
	54	Cover	CNC8922
	55	Cover	CNC8923
	56	Plate	CNC9010
	57	Cover	CNC9083
	58	Cushion	CNM6301
	59	Spacer	CNM6334
	60	Sheet	CNM6385
	61	Sheet	CNM6581
	62	PCB	CNP5371
	63	PCB	CNP5380
	64	PCB	CNP5381
	65	Ball	CNR1189
	66	Bearing	CNR1415
	67	Rail	CNV4420
	68	Lever	CNV4422
	69	Guide	CNV4597
	70	Guide	CNV4722
	71	Rack	CNV4828
	72	Guide	CNV5193
*	73	Rack	CNV5451
	74	Gear	CNV5658
	75	Gear	CNV5659
	76	Holder	CNV5661
	77	Holder	CNV5662
	78	Guide	CNV5663
	79	Guide	CNV5664
	80	Rail	CNV5668
	81	Guide	CNV5671
	82	Arm	CNV5868
	83	Arm	CNV6158
	84	Gear	CNV6226
	85	Gear	CNV6242
	86	Gear	CNV6285
	87	Connector(CN301)	CKS3476
	88	PCB	CNX3040
	89	Damper Unit	CXB6996
	90	Plate Unit	CXB2262

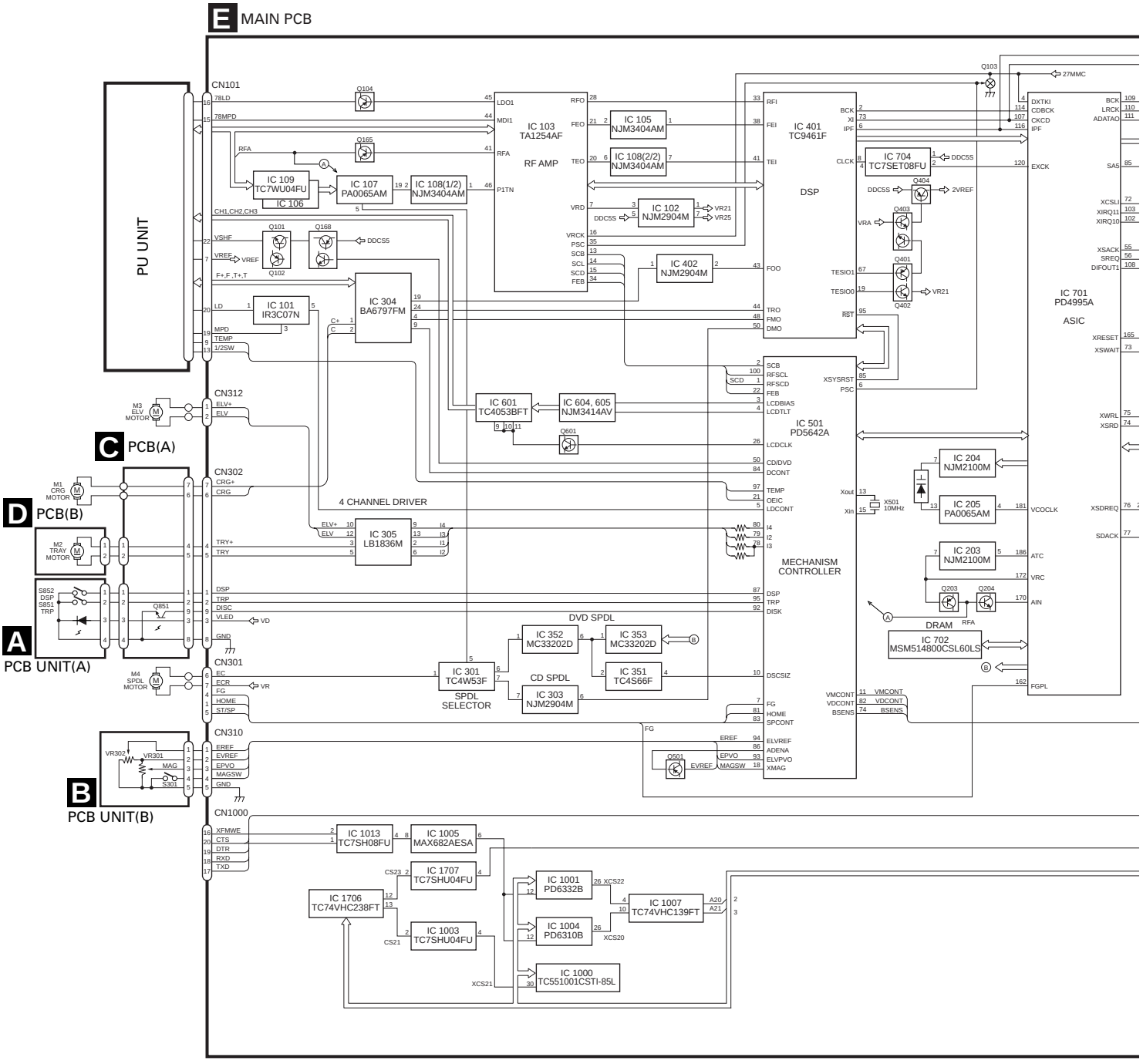
Mark	No.	Description	Part No.
	91	Lever Unit	CXB2266
	92	Motor Unit(-B)(Carriage)(M1)	CXB3930
	93	Screw	JFZ20P025FNI
	94	Motor Unit(-C)(ELV)(M4)	CXB3931
*	95	Gear	CNV6239
	96	Gear	CNV6240
*	97	Bracket Unit	CXB5838
*	98	Motor	CXM1116
	99	Screw	JFZ20P025FNI
	100	Motor Unit(-A)(Tray)(M2)	CXB3932
	101	Screw	JFZ20P025FNI
	102	Lever Unit	CXB3933
	103	Screw Unit(-D)	CXB3934
	104	Magazine Holder Unit	CXB3935
	105	Frame Unit	CXB3970
	106	Chassis Unit	CXB3972
	107	Chassis Unit	CXB3975
	108	Lever Unit	CXB3976
	109	Arm Unit	CXB4318
	110	Clamper	CNV5667

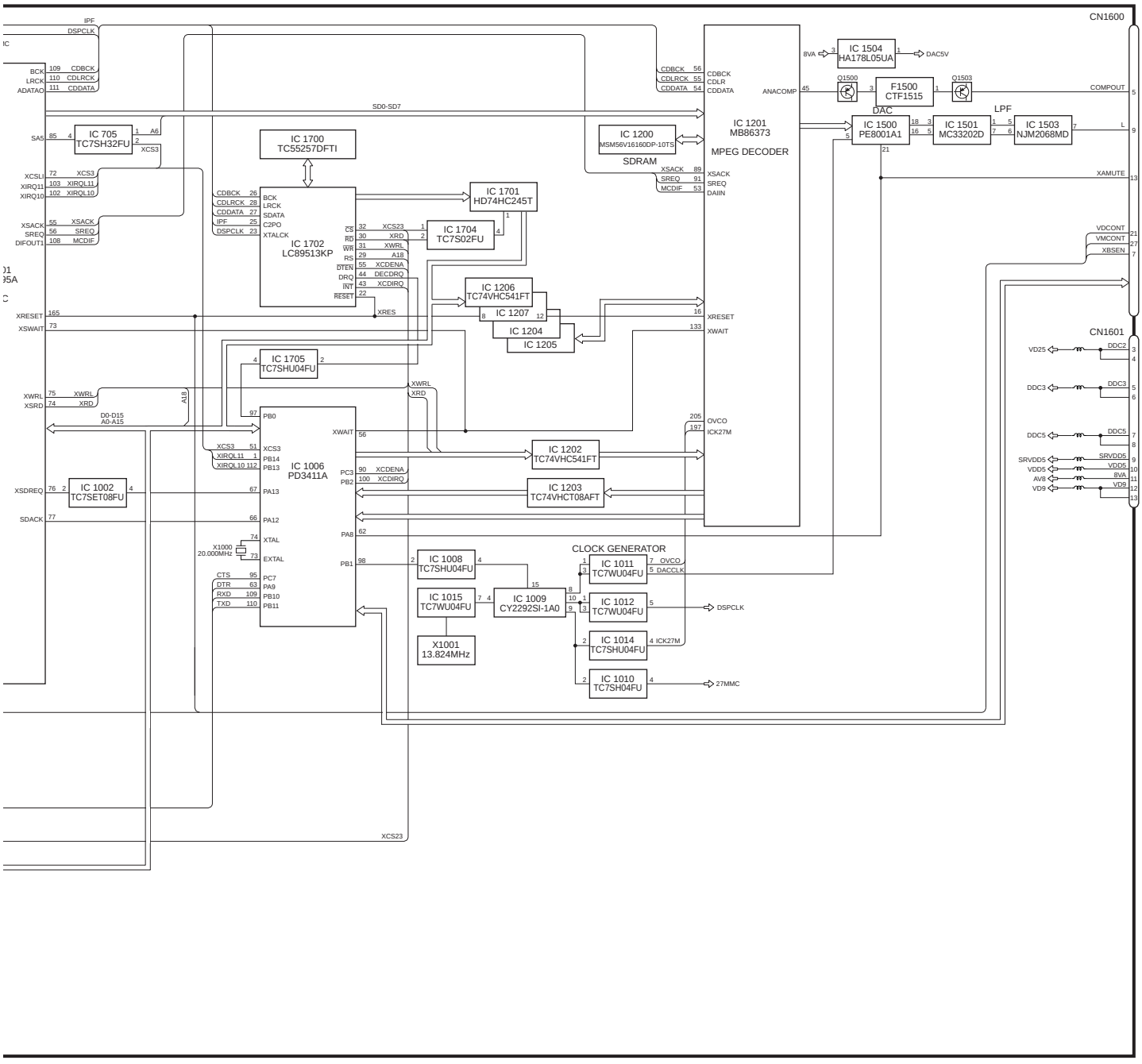
Mark	No.	Description	Part No.
	111	Motor(Spindle)(M3)	CXM1178
	112	Screw	IMS26P040FMC
	113	Screw	JFZ17P020FNI
*	114	Gear	CNV6225
*	115	Bracket Unit	CXB4003
*	116	Motor	CXM1117
	117	Photo Transistor(Q851)	PT4800
*	118	Bracket Unit	CXB3971
	119	LED(D851)	CN504-2
	120	Resistor(VR301)	CCW1021
	121	Switch(S301)	CSN1044
	122	Capacitor(C301)	CKSRYB104K16
	123	Resistor(R301)	RS1/16S562J
	124	Resistor(R302)	RS1/16S622J
	125	Semi-fixed(VR302)	CCP1338
	126	Switch(S852)	CSN1052
	127	Capacitor(C302)	CKSRYB103K50
	128	Switch(S851)	CSN1051
	129	Sheet	CNM6998
	130	Screw	ZMK30H025FZB

3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

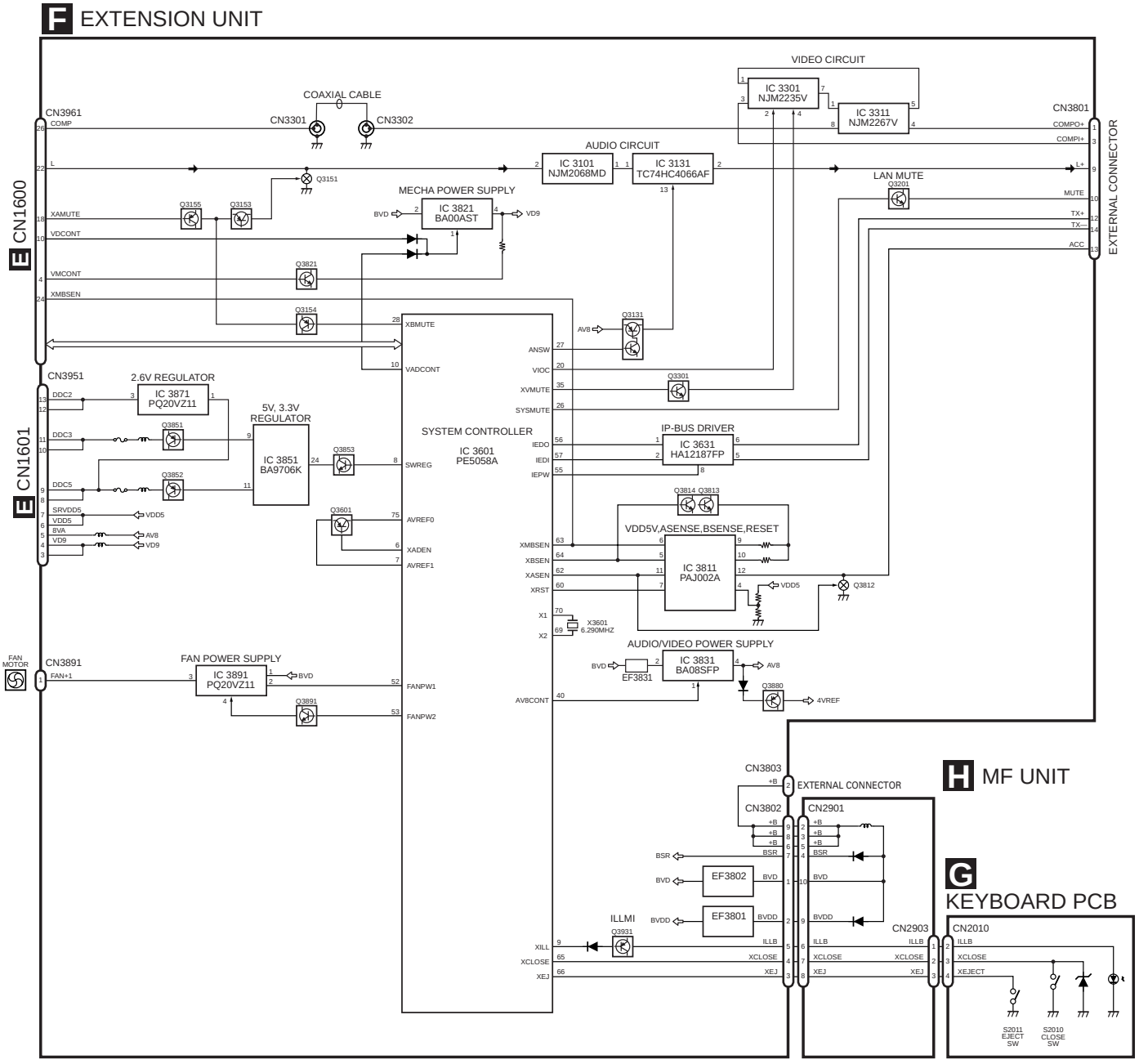
3.1 BLOCK DIAGRAM

● **DVD/CD Mechanism Unit, Main PCB**




CN1600
CN1601
CN3961
CN3951
IC 705 TC7SH32FU
IC 1700 TC55257DFTI
IC 1702 LC89513KP
IC 1705 TC7SHU04FU
IC 1006 PD3411A
IC 1002 TC7SET08FU
IC 1701 HD74HC245T
IC 1704 TC7S02FU
IC 1206 TC74VHC541FT
IC 1207
IC 1204
IC 1205
IC 1202 TC74VHC541FT
IC 1203 TC74VHCT08AFT
IC 1200 MSM56V16160DP-10TS
SDRAM
IC 1201 MB86373
MPEG DECODER
IC 1504 HA178L05UA
DAC5V
F1500 CTF1515
DAC
LPF
IC 1500 PE8001A1
IC 1501 MC33202D
IC 1503 NJM2068MD
COMPOUT
L
XAMUTE
VDCONT
VMCONT
XBSEN
CLOCK GENERATOR
IC 1008 TC7SHU04FU
IC 1015 TC7WU04FU
IC 1009 CY2292SI-1A0
IC 1011 TC7WU04FU
IC 1012 TC7WU04FU
IC 1014 TC7SHU04FU
IC 1010 TC7SH04FU
X1000 20.000MHz
X1001 13.824MHz
DSPCLK
ICK27M
27MMC
SD0-SD7
XRESET
XSWAIT
XWRL
XRD
XCS23
XCS3
XRES
XWAIT
XSDREQ
SDACK
XSACK
SREQ
MCDIF
CDBCK
CDLRCK
CDDATA
IPF
DSPCLK
BCK
LRCK
ADATAO
SA5
XCSLI
XIRQ11
XIRQ10
DIFOUT1
D0-D15
A0-A15
A18
OVCO
ICK27M
DDC2
DDC3
DDC5
SRVDD5
VDD5
AV8
VD9
8VA

● Extension Unit, MF Unit, Keyboard PCB

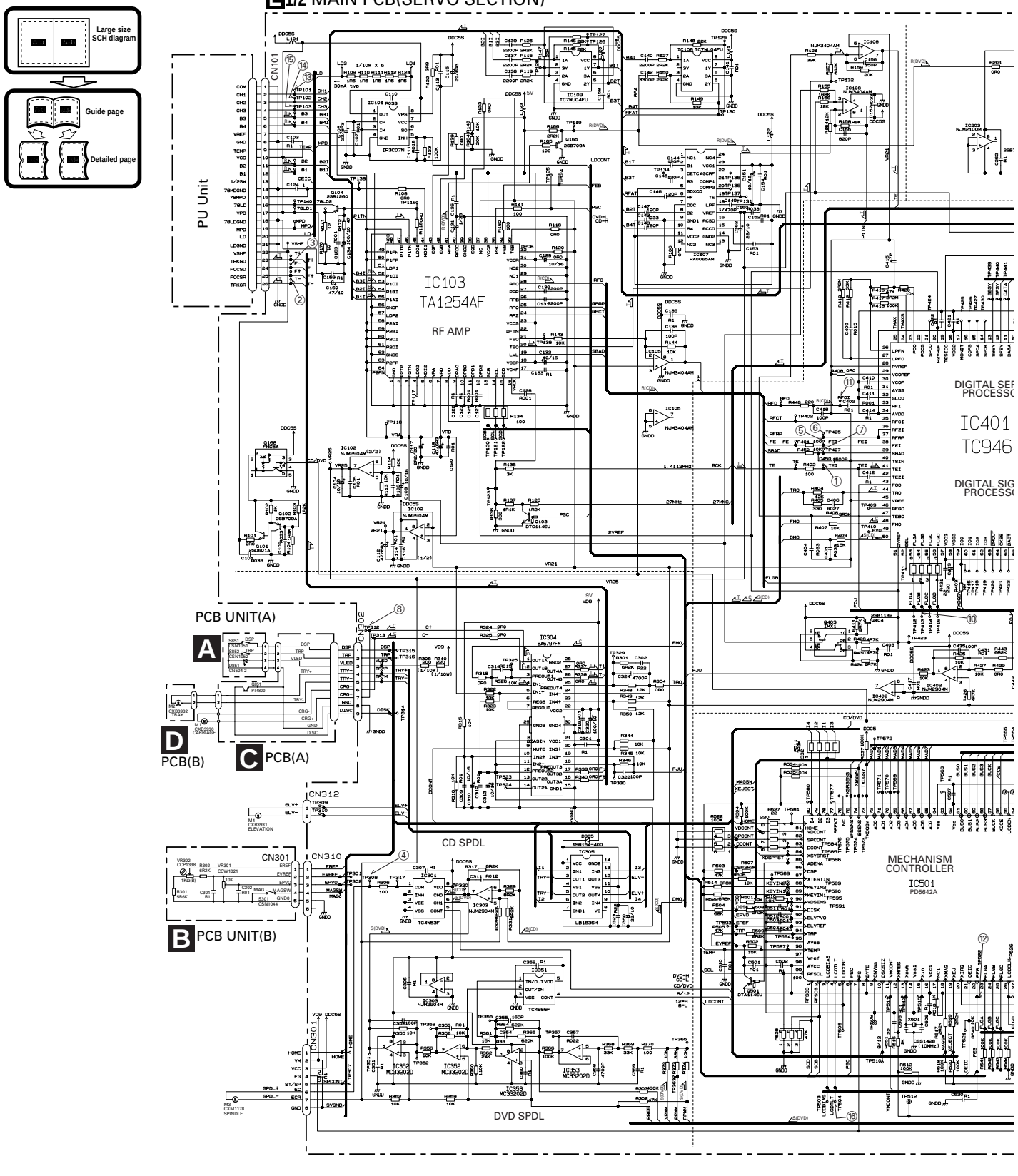


3.2 DVD MECHANISM UNIT, MAIN PCB(SERVO SECTION)(GUIDE PAGE)

Note: When ordering service parts, be sure to refer to "EXPLODED VIEWS AND PARTS LIST" or "ELECTRICAL PARTS LIST".

E-a 1/2

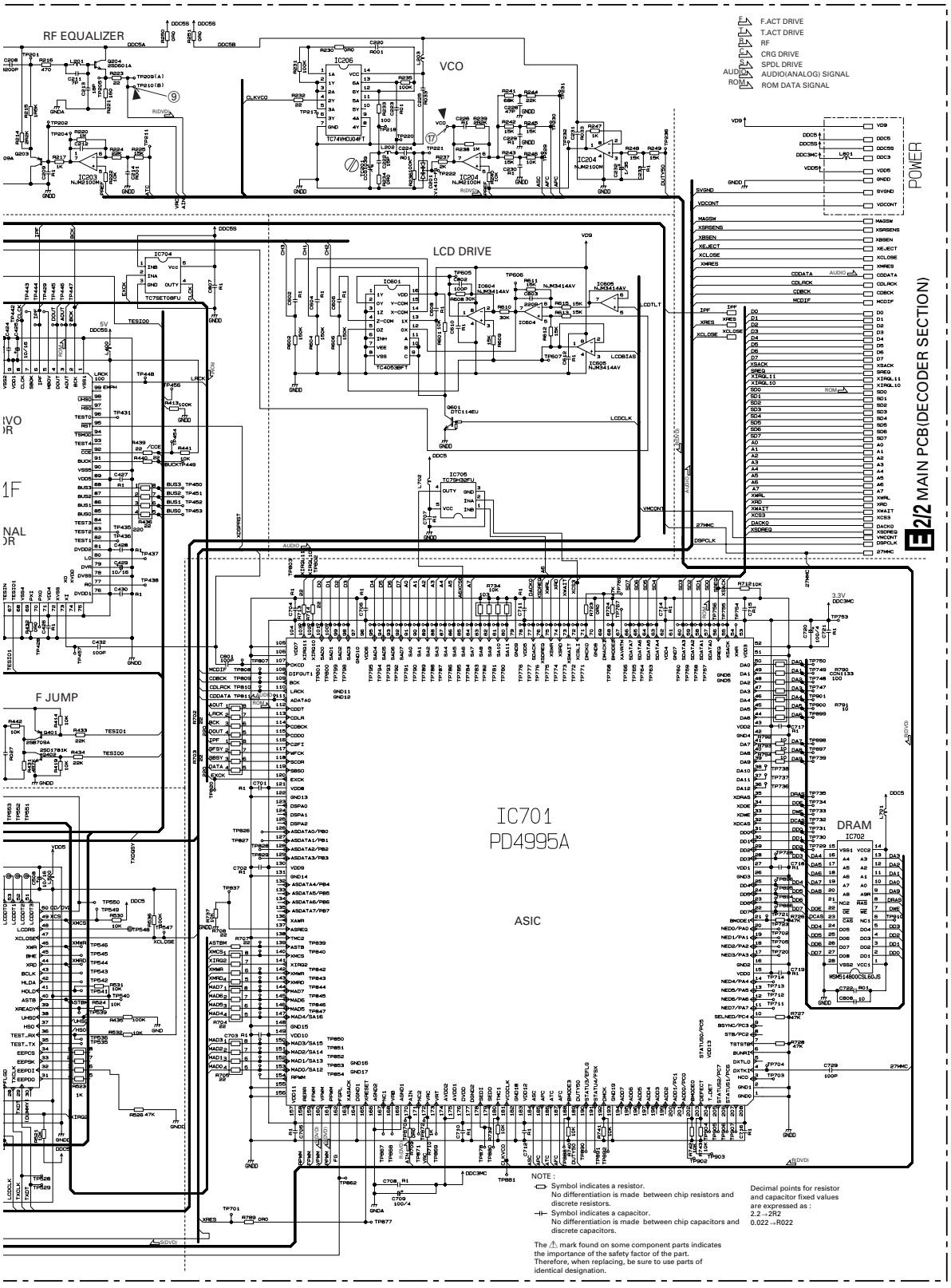
E 1/2 MAIN PCB(SERVO SECTION)



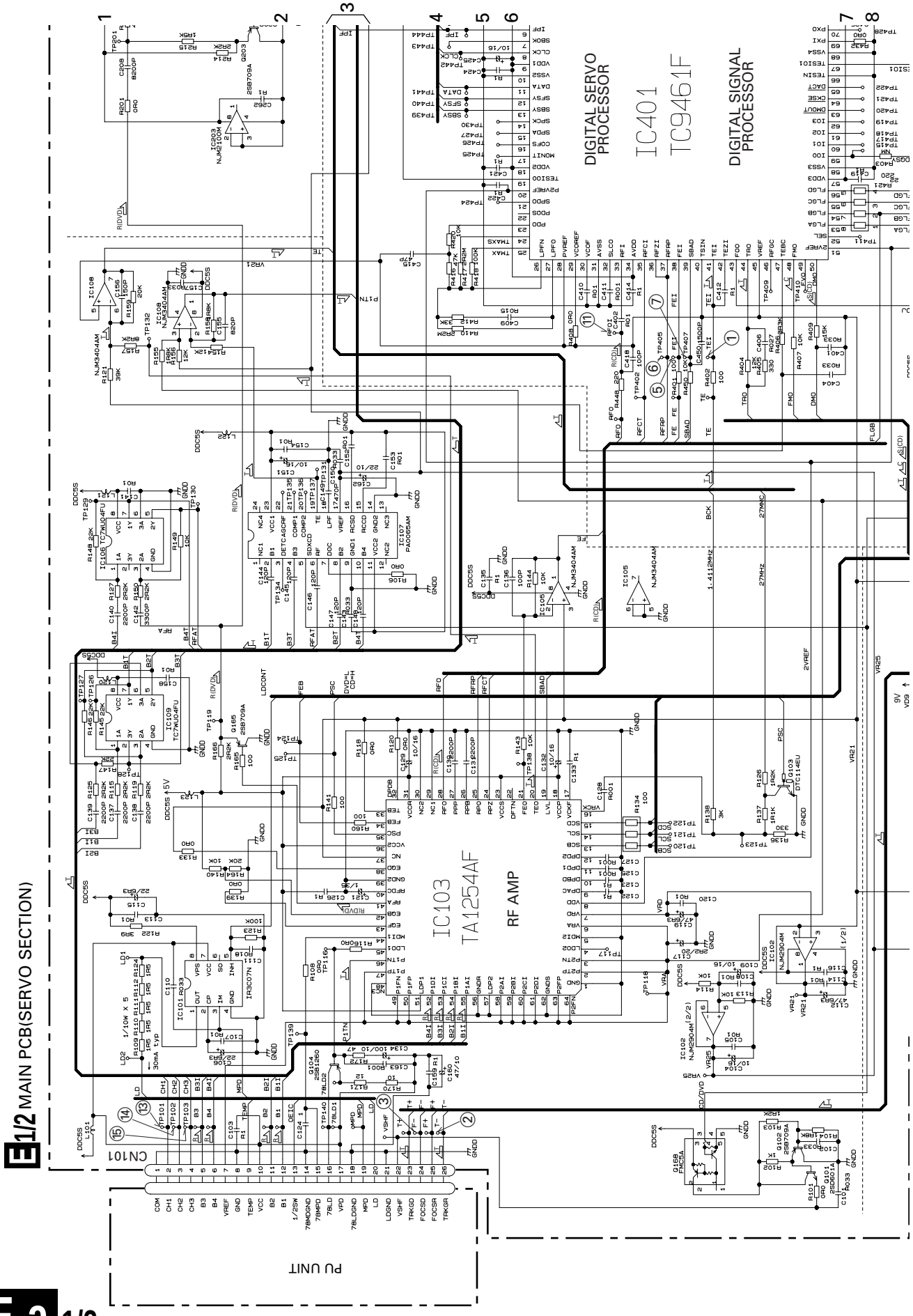
A B C D E 1/2

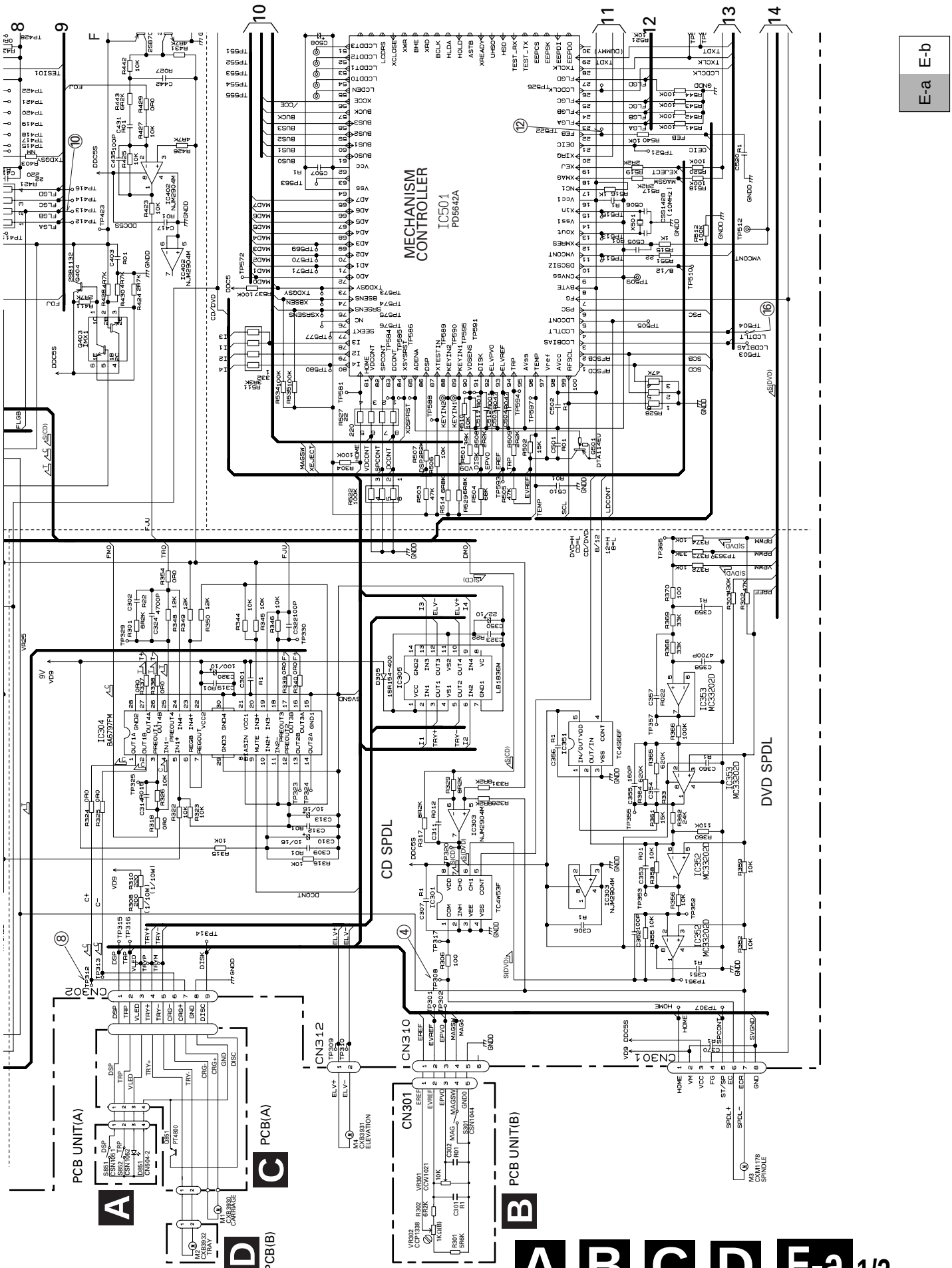
Main Unit
Consists of
Main PCB
Keyboard PCB

E-b 1/2



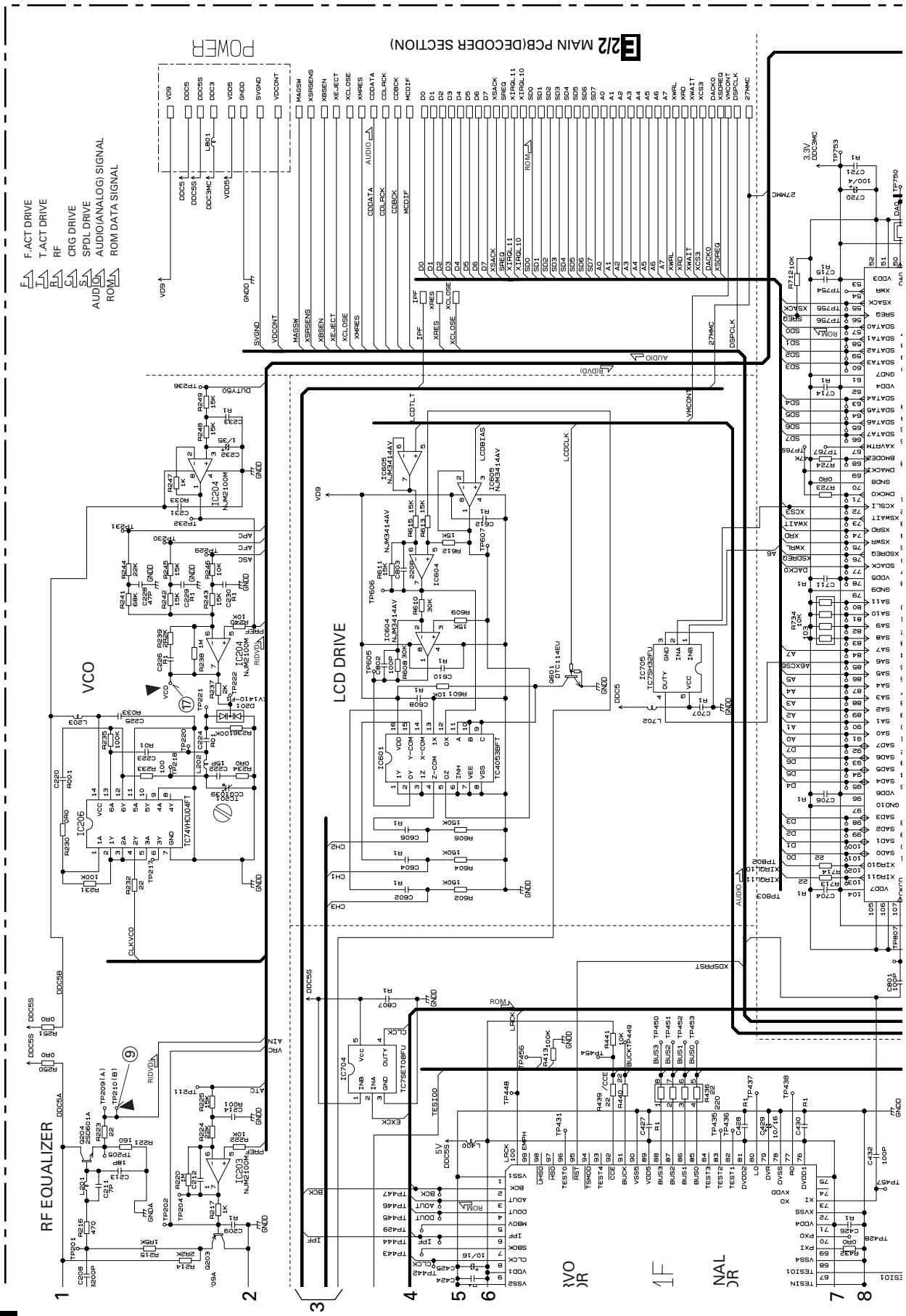
E-a E-b

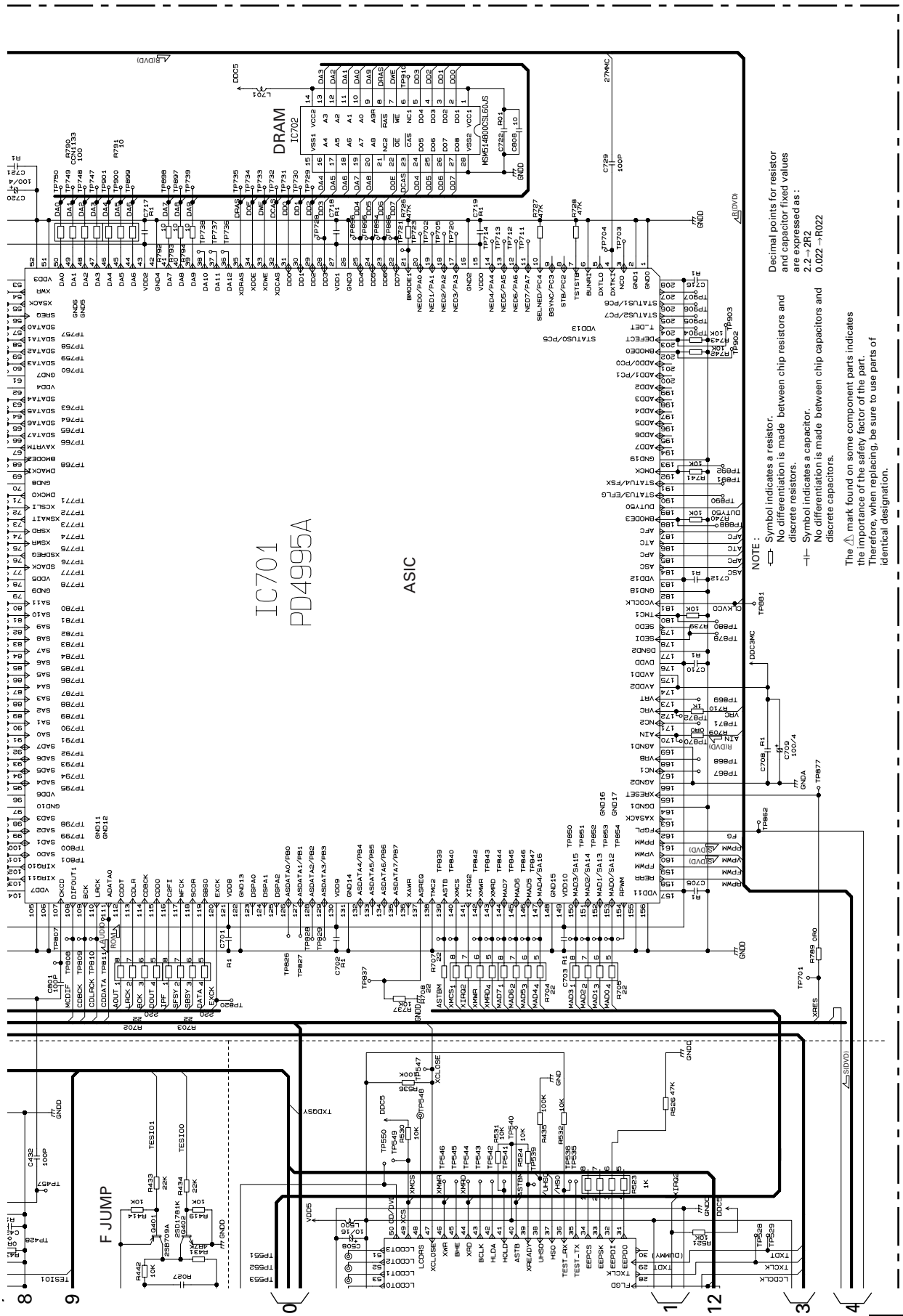

E1/2 MAIN PCB(SERVO SECTION)
IC401
TC9461F
DIGITAL SERVO PROCESSOR
DIGITAL SIGNAL PROCESSOR
IC103
TA1254AF
RF AMP
CN101
PU UNIT


MECHANISM CONTROLLER
IC501
PD5642A
CD SPDL
DVD SPDL
PCB UNIT(A)
PCB UNIT(B)
PCB(A)
PCB(B)
CN301
CN310
CN312
CN30D
CN30
IC304
BA6797FM
E-a
E-b
A
B
C
D
E-a 1/2

E-a E-b

Main Unit
Consists of
Main PCB
Keyboard PCB



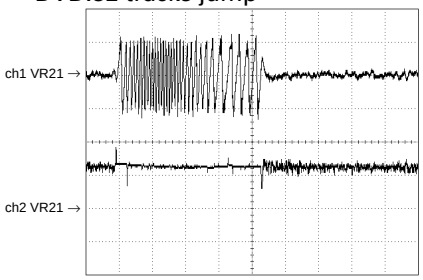

IC701
PD4995A
ASIC
DRAM
IC702
F JUMP
NOTE :
Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.
Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part.
Therefore, when replacing, be sure to use parts of identical designation.
Decimal points for resistor and capacitor fixed values are expressed as :
2.2→2R2
0.022→R022

Note:1. The encircled numbers denote measuring pointes in the circuit diagram.
2. Reference voltage
VR21:2.1V

● Waveforms

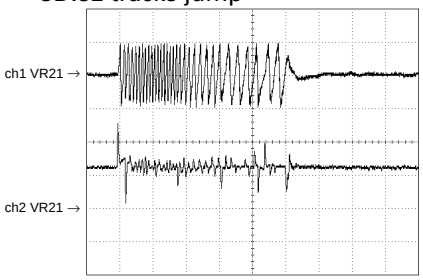
① CH1:TEI 1V/div.
② CH2:T- 2V/div. 2ms/div.

DVD:32 tracks jump



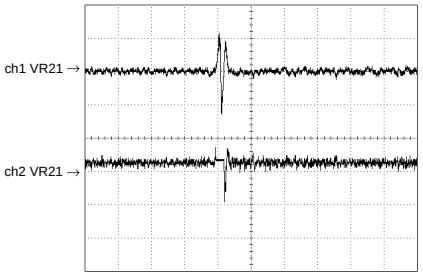
① CH1:TEI 1V/div.
② CH2:T- 2V/div. 2ms/div.

CD:32 tracks jump



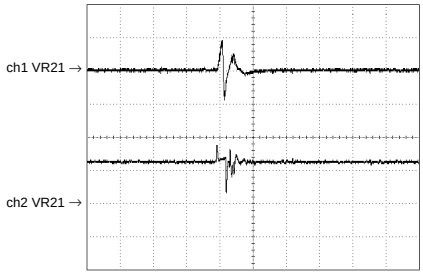
① CH1:TEI 1V/div.
② CH2:T- 2V/div. 2ms/div.

DVD:1 track jump



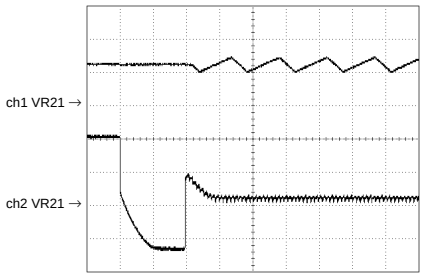
① CH1:TEI 1V/div.
② CH2:T- 2V/div. 2ms/div.

CD:1 track jump



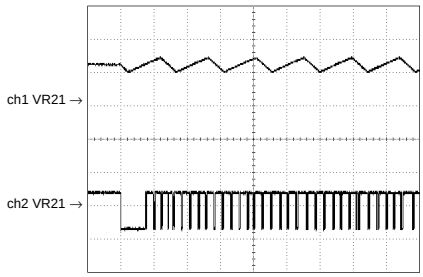
③ CH1:F- 2V/div.
④ CH2:EC(TP308) 1V/div. 500ms/div.

DVD:S curve check
Servo adjustment mode



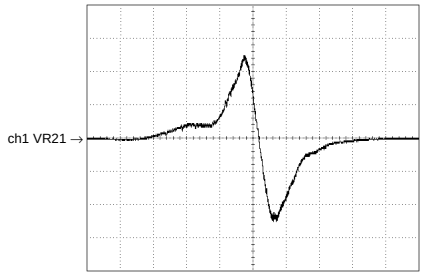
③ CH1:F- 2V/div.
④ CH2:EC(TP308) 1V/div. 500ms/div.

CD:S curve check
Servo adjustment mode



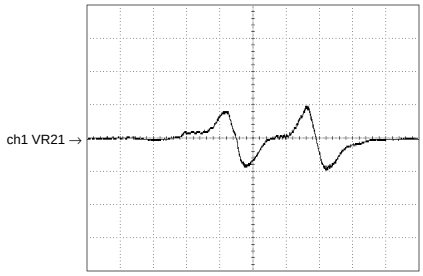
⑤ CH1:FEI 500mV/div. 2ms/div.

DVD:S curve check
Servo adjustment mode



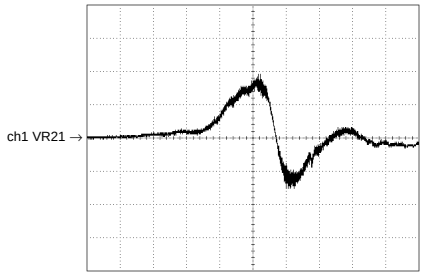
⑤ CH1:FEI 500mV/div. 2ms/div.

2 layer DVD:S curve check
Servo adjustment mode



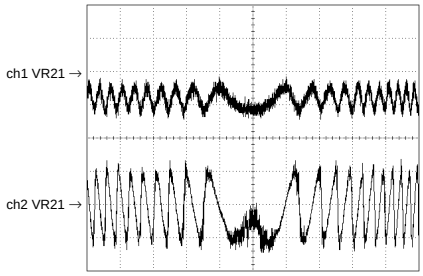
⑤ CH1:FEI 500mV/div. 2ms/div.

CD:S curve check
Servo adjustment mode



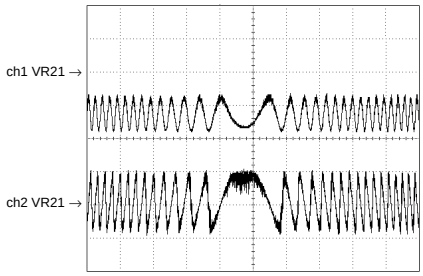
⑥ CH1:RFRP(TP405) 500mV/div.
① CH2:TEI 1V/div. 2ms/div.

CD:RFRP waveform
Focus close situation



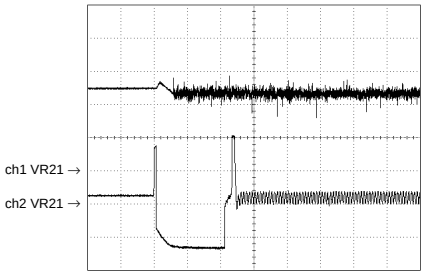
⑥ CH1:RFRP(TP405) 500mV/div.
① CH2:TEI 1V/div. 5ms/div.

CD:RFRP waveform
Focus close situation



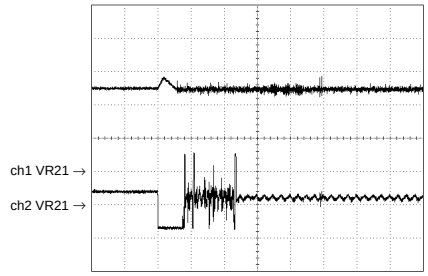
③ CH1:F- 1V/div.
④ CH2:EC(TP308) 1V/div. 500ms/div.

DVD:Focus close situation



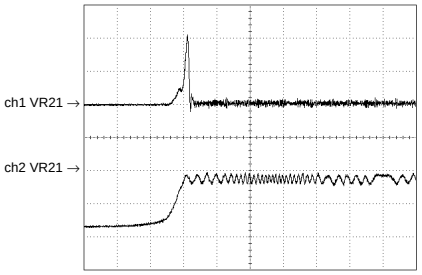
③ CH1:F- 1V/div.
④ CH2:EC(TP308) 1V/div. 500ms/div.

CD:focus close



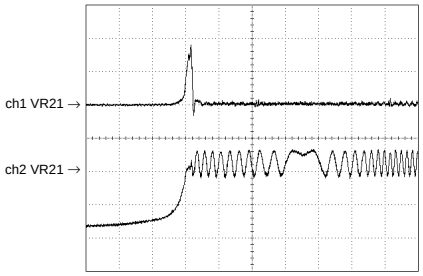
⑤ CH1:FEI 500mV/div.
⑦ CH2:SBAD(TP407) 500mV/div. 10ms/div.

DVD:focus close



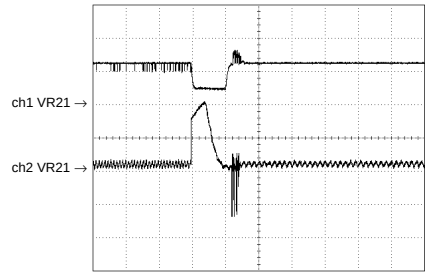
⑤ CH1:FEI 500mV/div.
⑦ CH2:SBAD(TP407) 500mV/div. 10ms/div.

CD:focus close



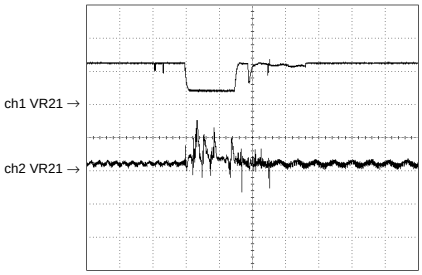
⑧ CH1:C-(TP313) 2V/div.
④ CH2:EC(TP308) 1V/div. 500m/div.

DVD:CRG inside→outside



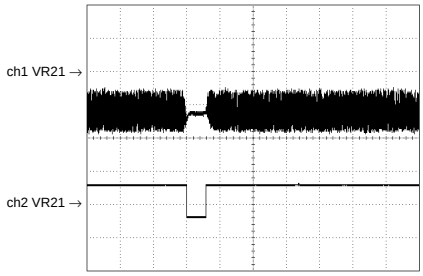
⑧ CH1:C-(TP313) 2V/div.
④ CH2:EC(TP308) 1V/div. 500m/div.

CD:CRG inside→outside



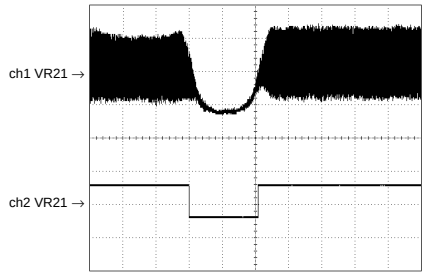
⑨ CH1:Ain(TP210) 1V/div.
⑩ CH2:FLGB(TP413) 5V/div. 500µs/div.

DVD:passing black dot (1mm)



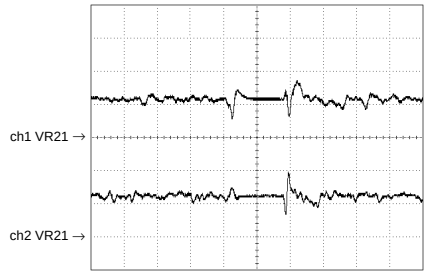
⑪ CH1:RFOI 1V/div.
⑩ CH2:FLGB(TP413) 5V/div. 500µs/div.

CD:passing black dot (1mm)



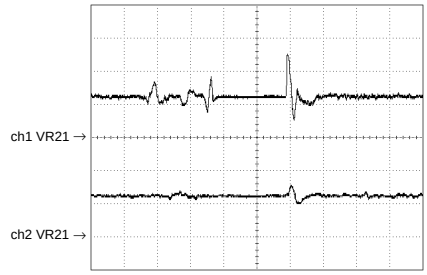
③ CH1:F- 2V/div.
② CH2:T- 2V/div. 200µs/div.

DVD:passing black dot (1mm)



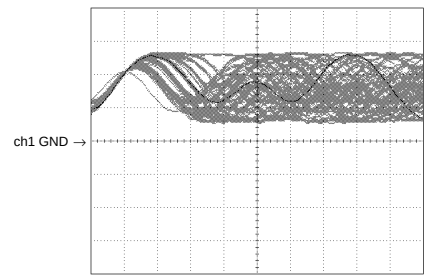
③ CH1:F- 2V/div.
② CH2:T- 2V/div. 500µs/div.

CD:passing black dot (1mm)



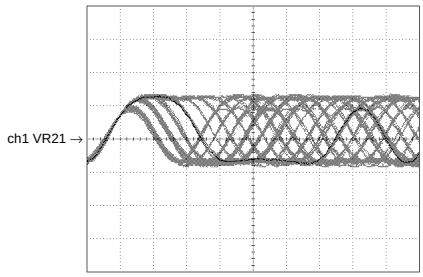
⑨ CH1:Ain(TP210) 500mV/div. 100ns/div.

DVD:during playback Ain waveform



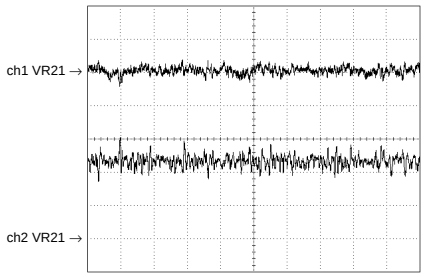
⑩ CH1:RFOI 1V/div. 500ns/div.

CD:during playback RFOI waveform



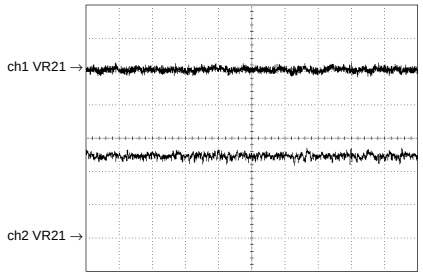
⑤ CH1:FEI 200mV/div.
③ CH2:F- 1V/div. 1ms/div.

DVD:during playback FEI waveform



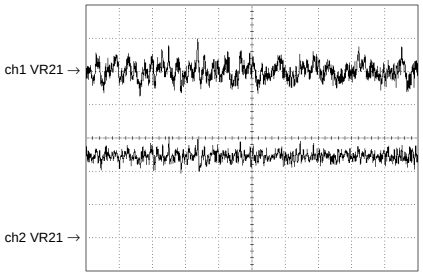
⑤ CH1:FEI 200mV/div.
③ CH2:F- 1V/div. 1ms/div.

CD:during playback FEI waveform



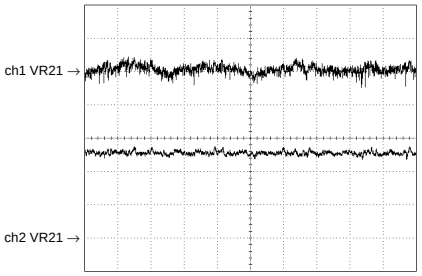
① CH1:TEI 200mV/div.
② CH2:T- 1V/div. 1ms/div.

DVD:during playback TEI waveform



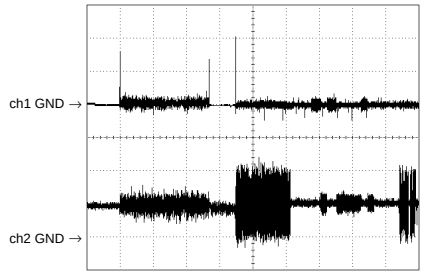
① CH1:TEI 200mV/div.
② CH2:T- 1V/div. 1ms/div.

CD:during playback TEI waveform



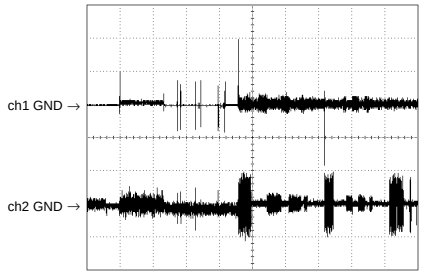
⑤ CH1:FEI 500mV/div.
① CH2:TEI 1V/div. 500ms/div.

DVD:setup



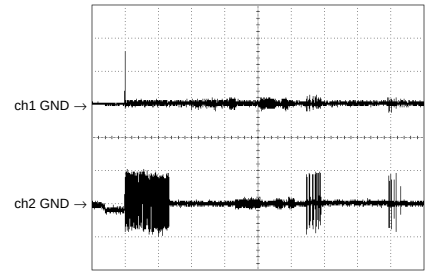
⑤ CH1:FEI 500mV/div.
① CH2:TEI 1V/div. 1s/div.

2 layer DVD:setup



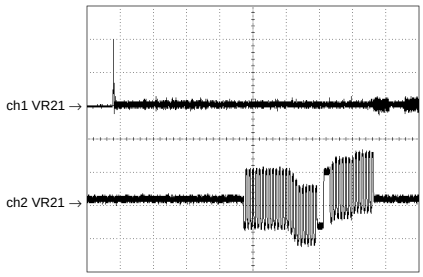
⑤ CH1:FEI 500mV/div.
① CH2:TEI 1V/div. 500ms/div.

CD:setup



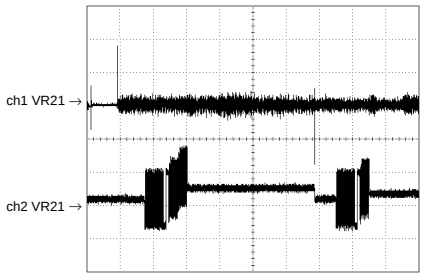
⑤ CH1:FEI 500mV/div.
⑫ CH2:FEB(TP522) 200mV/div. 500ms/div.

DVD:focus balance adjustment



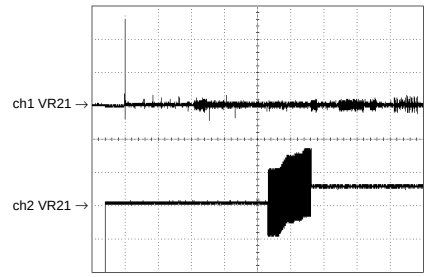
⑤ CH1:FEI 500mV/div.
⑫ CH2:FEB(TP522) 200mV/div. 500ms/div.

2 layer DVD:focus balance adjustment



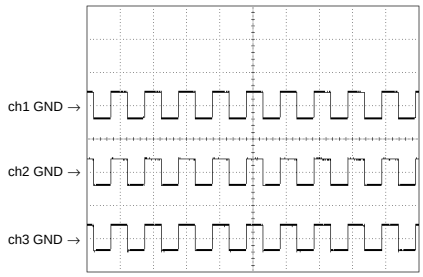
⑤ CH1:FEI 500mV/div.
⑫ CH2:FEB(TP522) 500mV/div. 500ms/div.

CD:focus balance adjustment



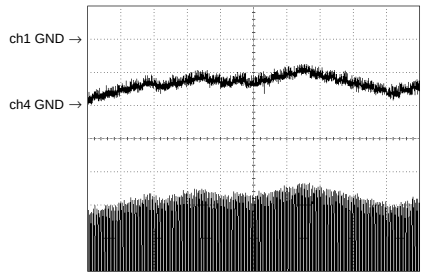
⑬ CH1:TP101 5V/div.
⑭ CH2:TP102 5V/div. 1ms/div.
⑮ CH3:TP103 5V/div.

DVD:LCD tilt servo



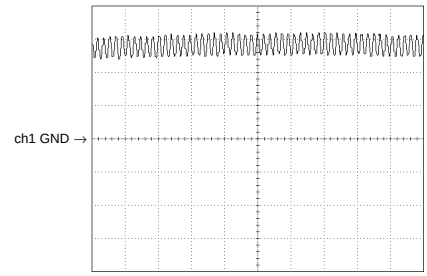
⑬ CH1:TP101 200mV/div.
⑯ CH4:LCDTILT(TP504) 100mV/div. 1s/div.

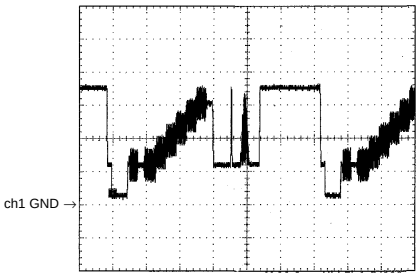
DVD:LCD tilt servo
CH1, CH4:offset voltage 2.5V



⑰ CH1:VCO 500mV/div. 200ns/div.

DVD:VCO



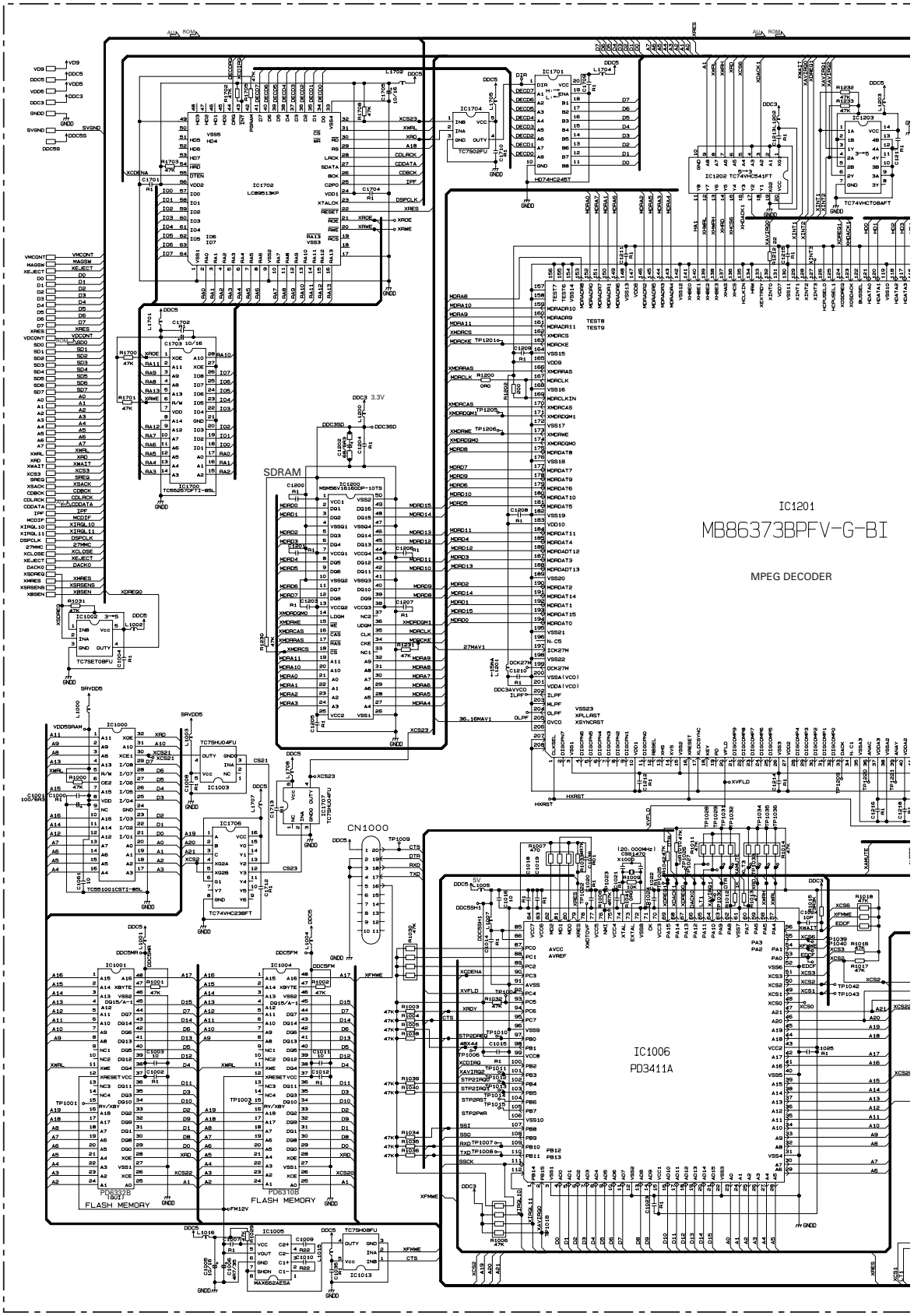
⑱ IC1201 pin 45 200mV/div. 10µs/div. Composite signal output  		

3.3 MAIN PCB(DECODER SECTION)(GUIDE PAGE)

E-a 2/2

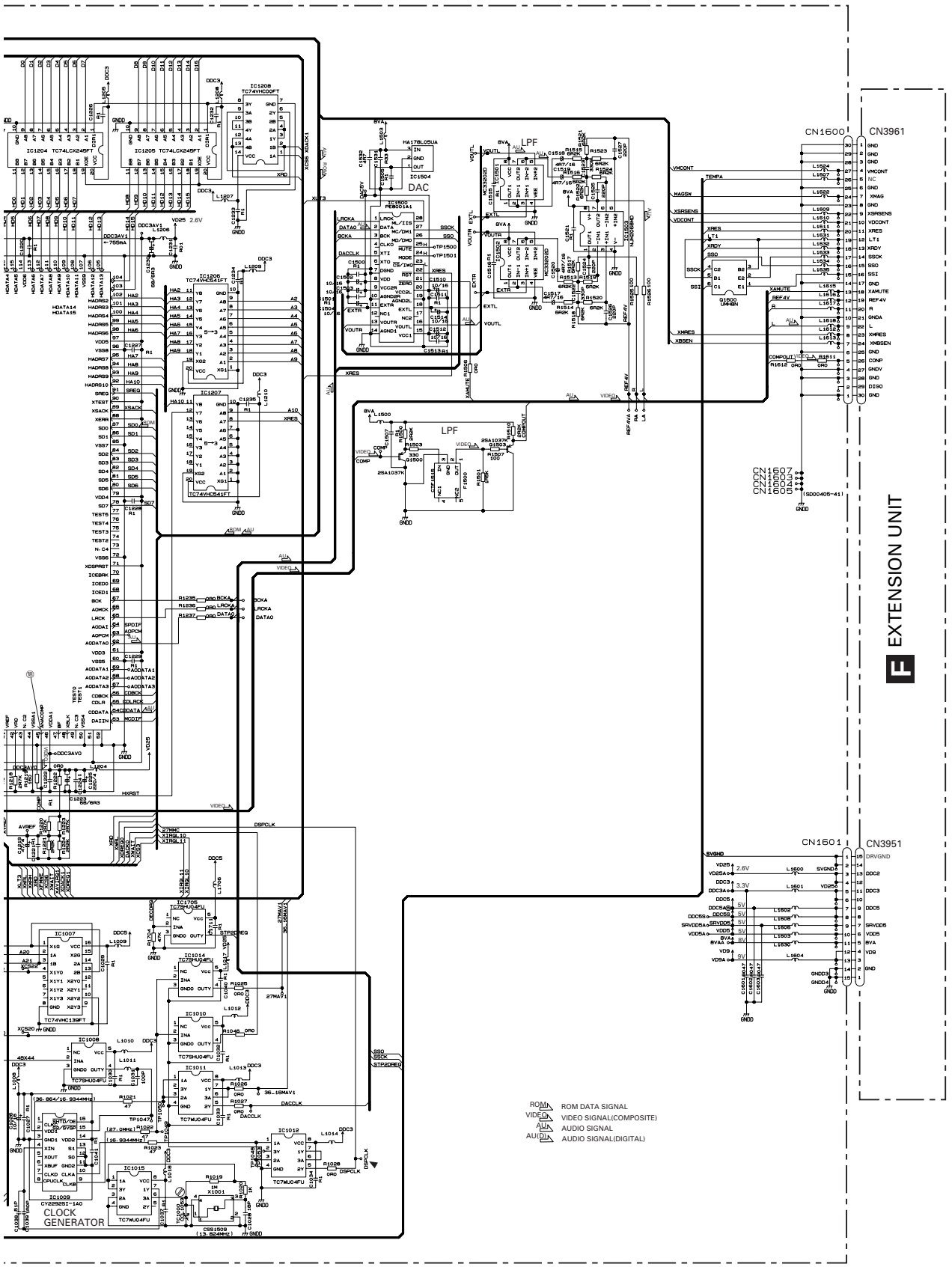
E2/2 MAIN PCB(DECODER SECTION)

E1/2 MAIN PCB(SERVO SECTION)

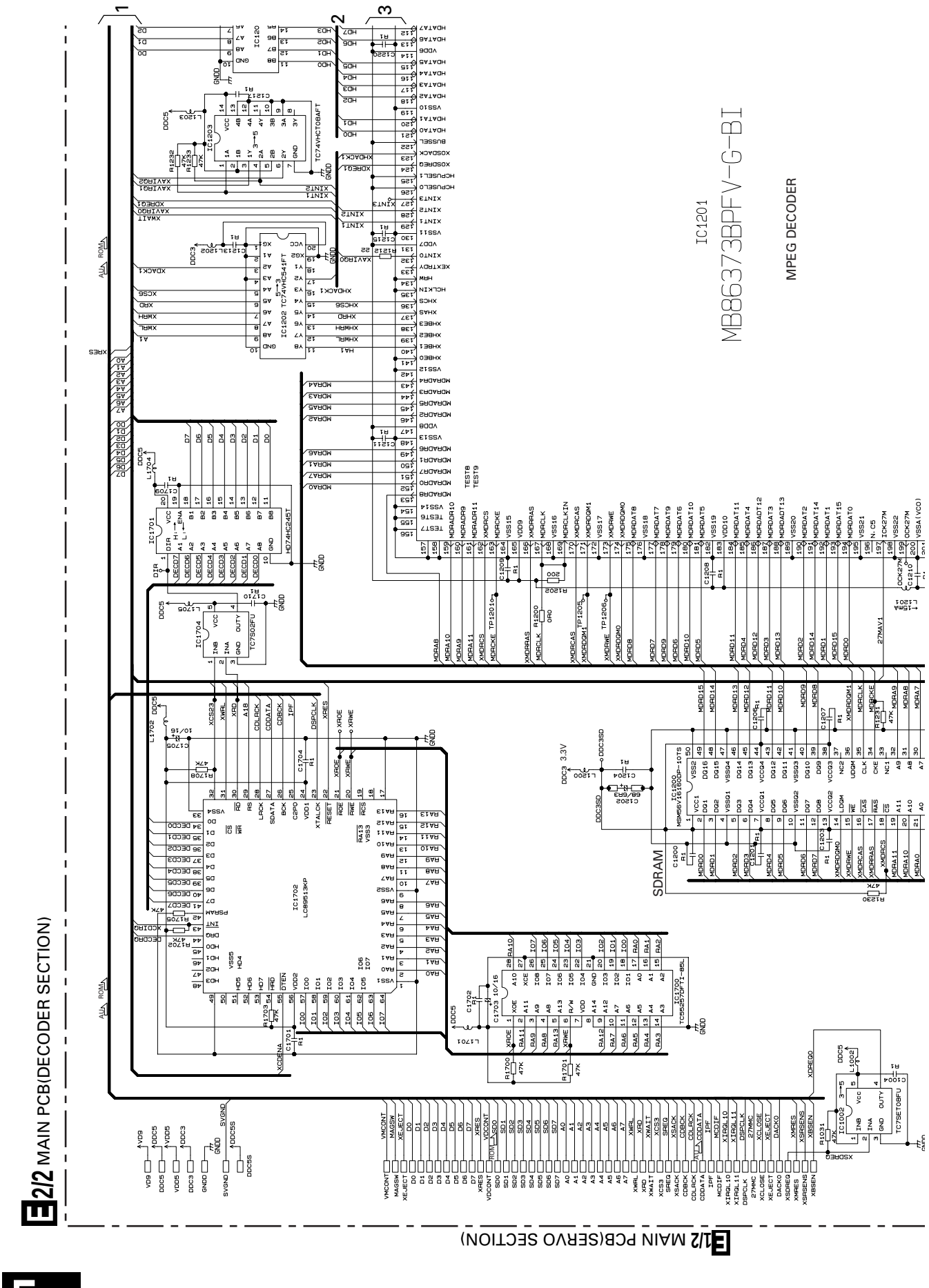


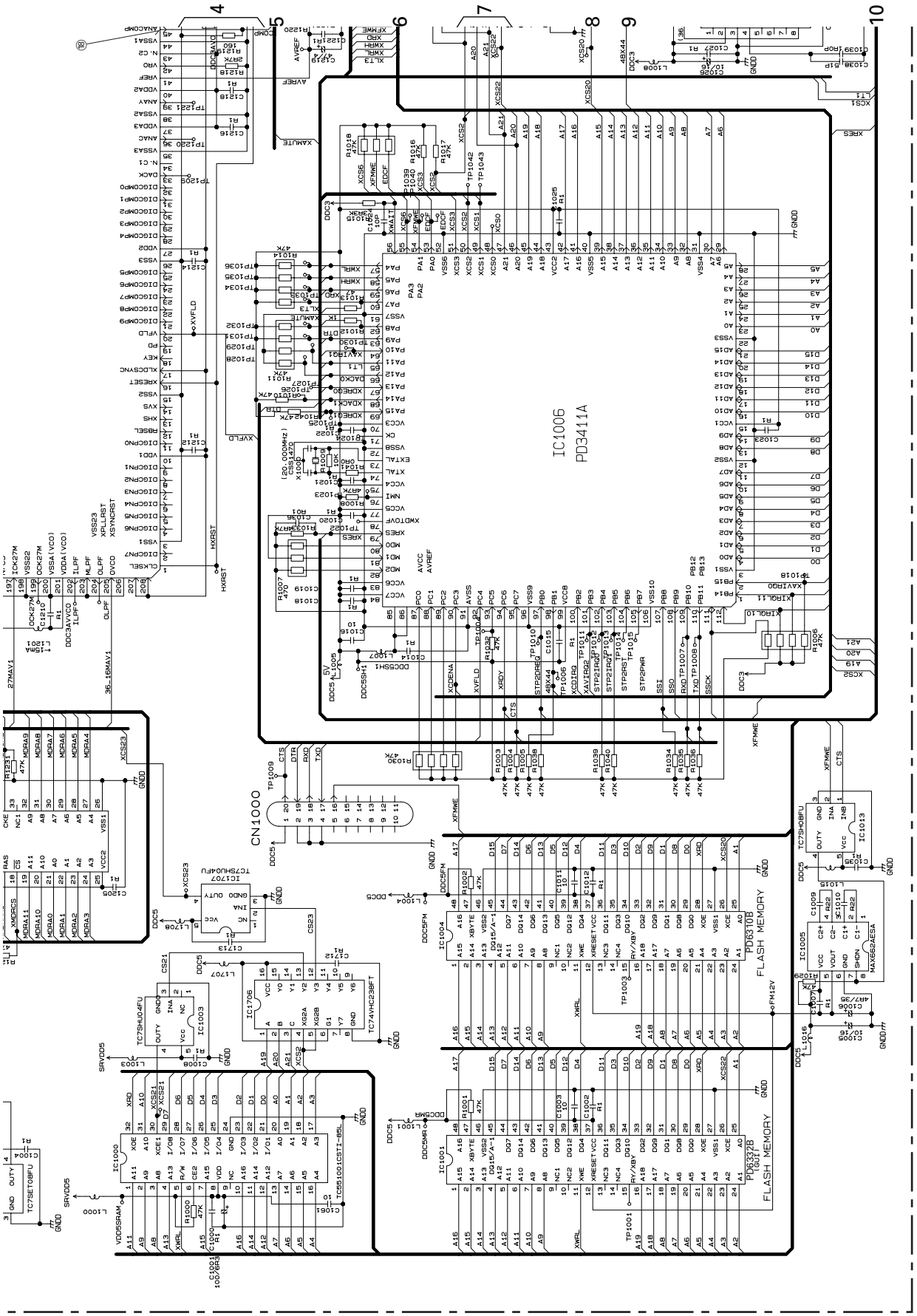
Main Unit
Consists of
Main PCB
Keyboard PCB

E-b 2/2



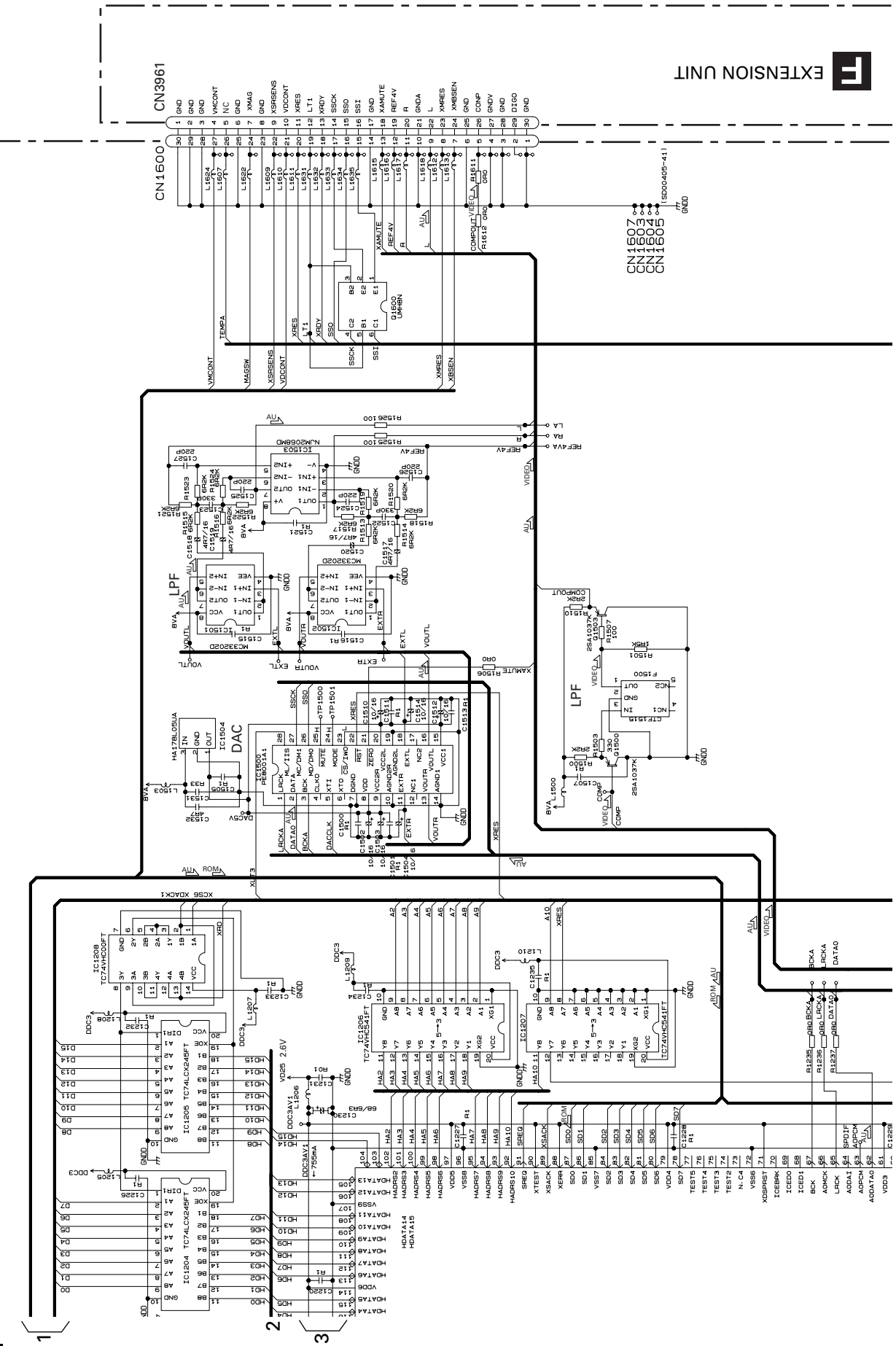
E-a E-b

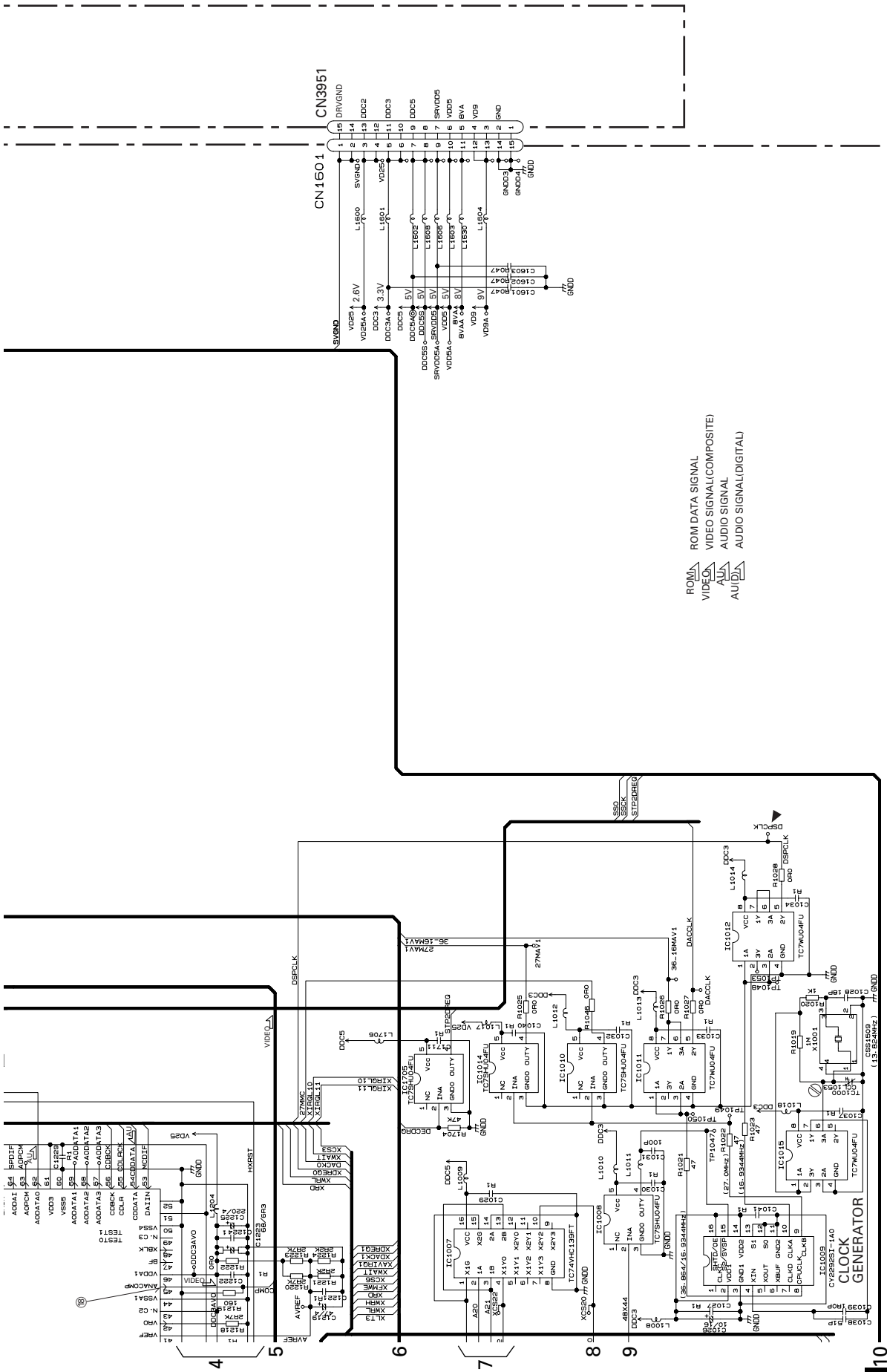

E2/2 MAIN PCB(DECODER SECTION)
E1/2 MAIN PCB(SERVO SECTION)
IC1201
MB86373BPFV-G-BI
MPEG DECODER
SDRAM
IC1702
LC89513KP
IC1200
MSM56V16160DP-10TS
IC1700
TC55257DFTI-85L
IC1202 TC74VHC541FT
IC1203 TC74VHCT08AFT
IC1704 TC7SG02FU
IC1701 TC74HC245T
IC1100 TC7SET08FU
IC120 TC74HC08AFT
VDD3 3.3V
DDC3
DDC5
DDC35D
SDRAM
XSDRES


IC1006
PD3411A
CN1000
FLASH MEMORY
PD63108
PD63128
E-a
E-b

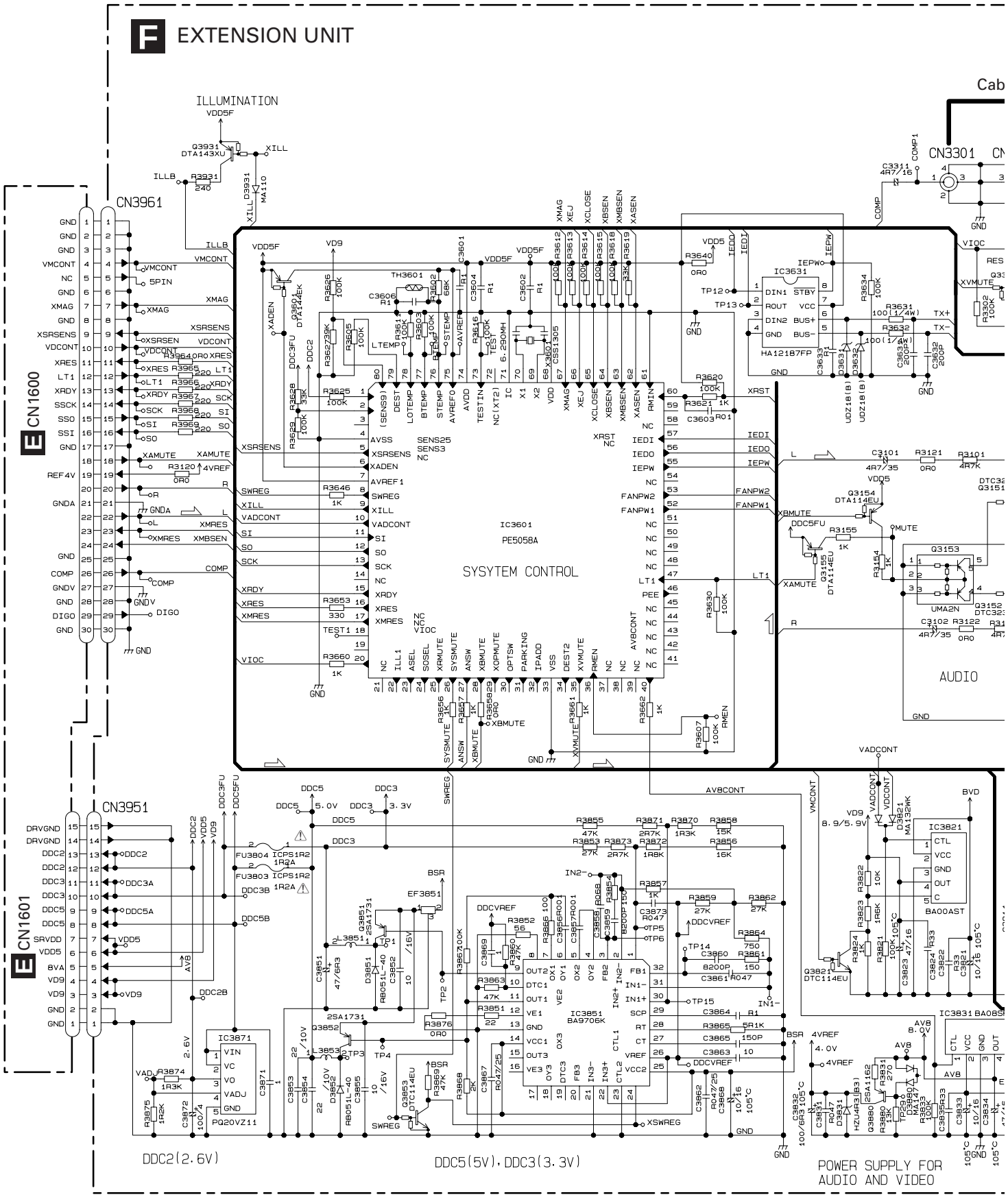
E-a E-b

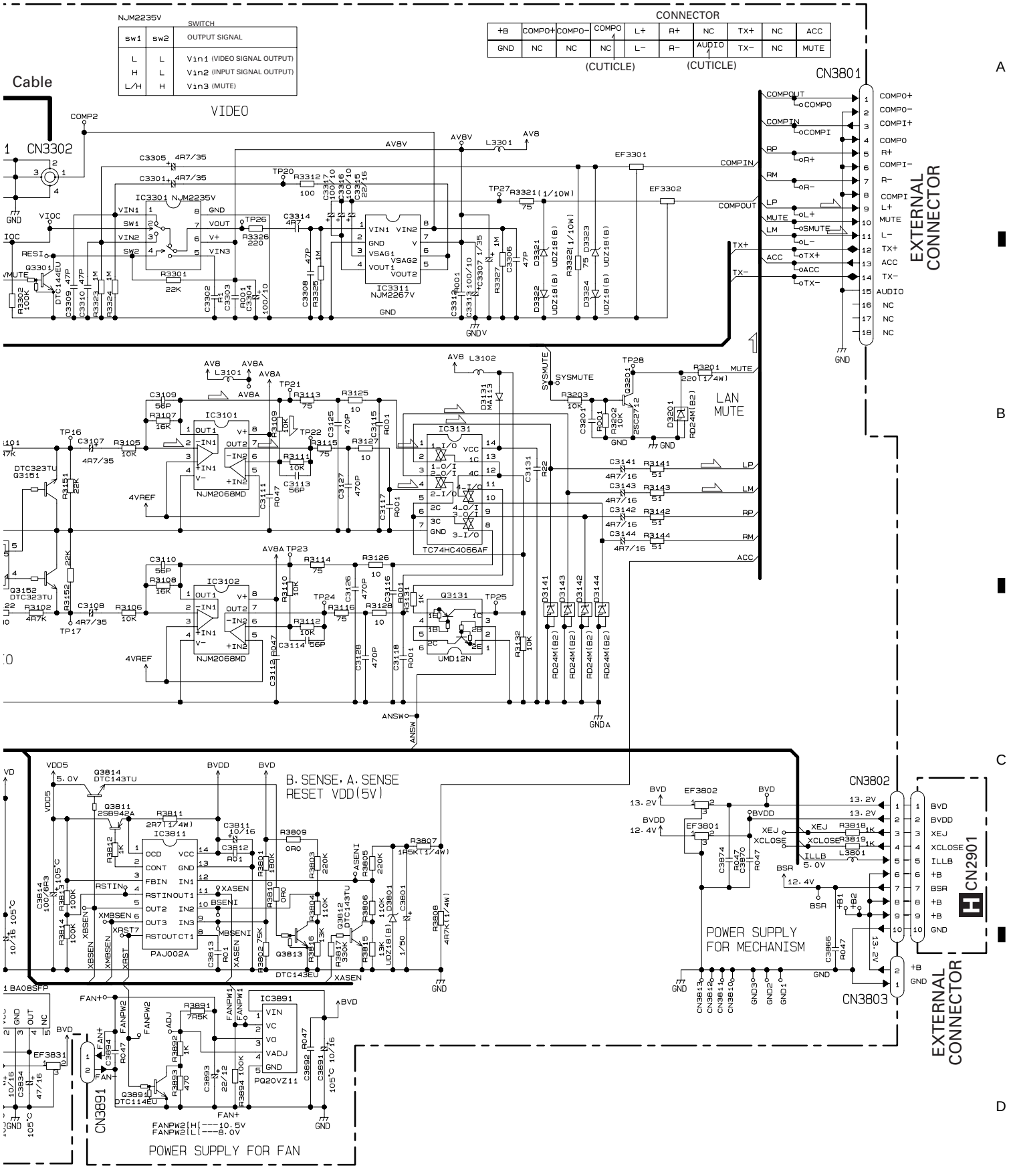
Main Unit
Consists of
Main PCB
Keyboard PCB




CN3951
CN1601
ROM DATA SIGNAL
VIDEO SIGNAL(COMPOSITE)
AUDIO SIGNAL
AUDIO SIGNAL(DIGITAL)
CLOCK GENERATOR

3.4 EXTENSION UNIT

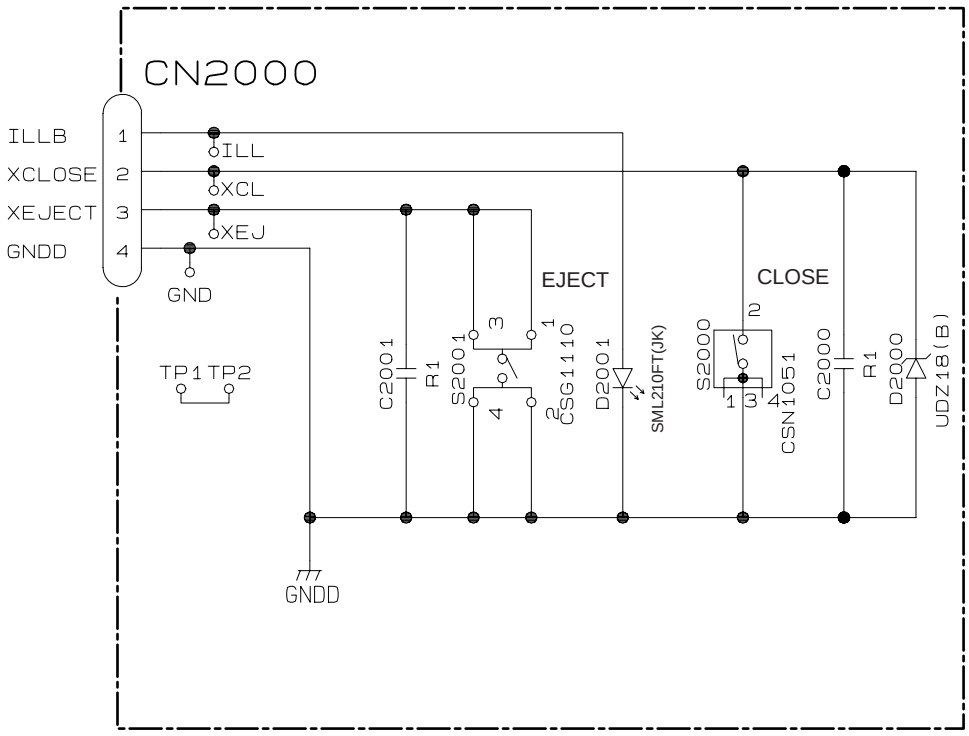



NJM2235V
SWITCH
sw1 sw2 OUTPUT SIGNAL
L L Vin1 (VIDEO SIGNAL OUTPUT)
H L Vin2 (INPUT SIGNAL OUTPUT)
L/H H Vin3 (MUTE)
CONNECTOR
+B COMPO+ COMPO− COMPO L+ R+ NC TX+ NC ACC
GND NC NC NC L− R− AUDIO TX− NC MUTE
(CUTICLE) (CUTICLE)
Cable
VIDEO
CN3302
CN3801
EXTERNAL CONNECTOR
IC3301 NJM2235V
IC3311 NJM2267V
IC3101
IC3102
NJM2068MD
IC3131
TC74HC4066AF
LAN MUTE
POWER SUPPLY FOR MECHANISM
CN3802
CN2901
CN3803
POWER SUPPLY FOR FAN
CN3891
IC3891
PQ20VZ11
PAJ002A
IC3811
FANPW2[H]---10.5V
FANPW2[L]---8.0V

3.5 KEYBOARD PCB

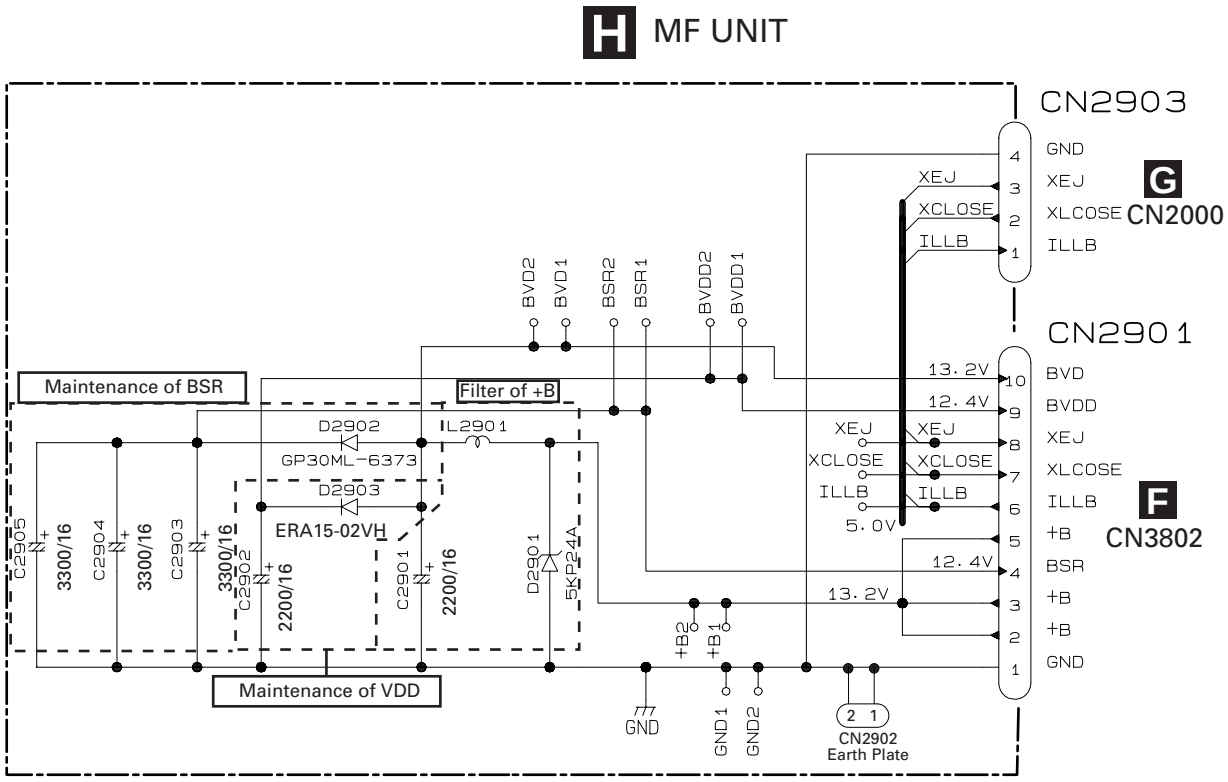
G KEYBOARD PCB

H CN2903



Main Unit
Consists of Main PCB Keyboard PCB

3.6 MF UNIT

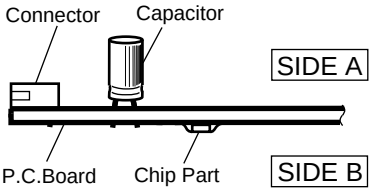

H MF UNIT
CN2903
GND
XEJ
XLCOSE
ILLB
G
CN2000
CN2901
BVD
BVDD
XEJ
XLCOSE
ILLB
F
CN3802
+B
BSR
+B
+B
GND
BVD2
BVD1
BSR2
BSR1
BVDD2
BVDD1
13.2V
12.4V
5.0V
Maintenance of BSR
Filter of +B
Maintenance of VDD
D2902
GP30ML-6373
D2903
ERA15-02VH
IL2901
D2901
5KP24A
C2905
3300/16
C2904
3300/16
C2903
3300/16
C2902
2200/16
C2901
2200/16
+B2
+B1
GND
GND1
GND2
CN2902
Earth Plate

4. PCB CONNECTION DIAGRAM

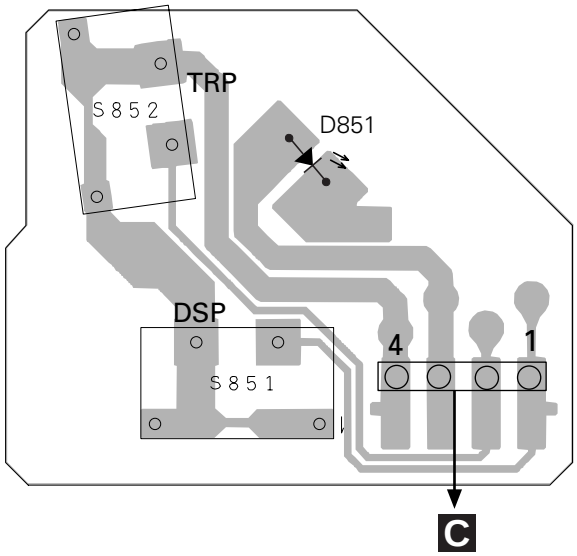
4.1 DVD/CD MECHANISM UNIT

NOTE FOR PCB DIAGRAMS

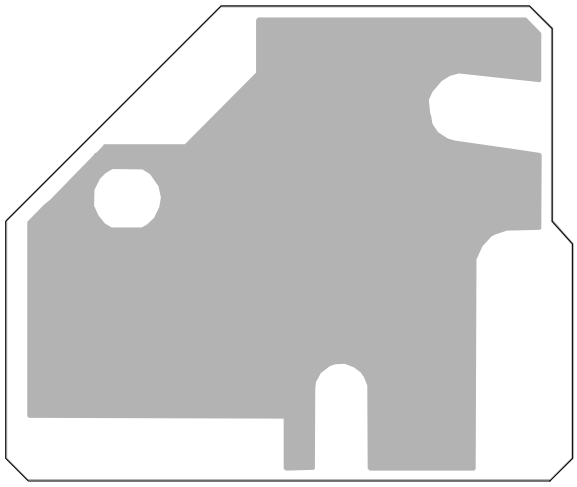
1. The parts mounted on this PCB include all necessary parts for several destination.
   For further information for respective destinations, be sure to check with the schematic diagram.
2. Viewpoint of PCB diagrams



A PCB UNIT(A) **SIDE A**

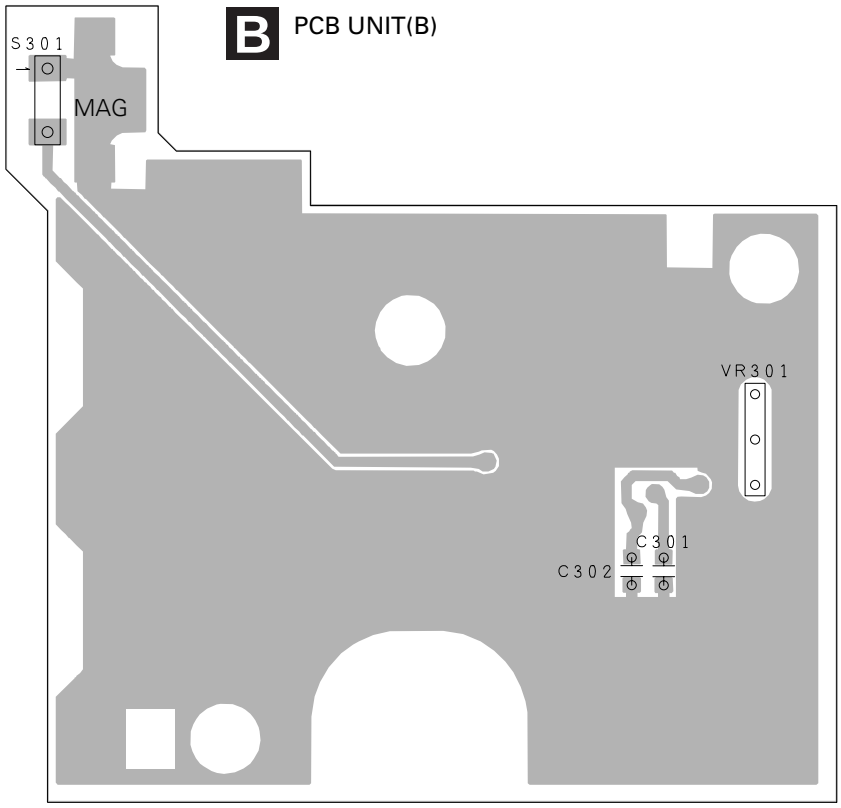


A PCB UNIT(A) **SIDE B**



B PCB UNIT(B)

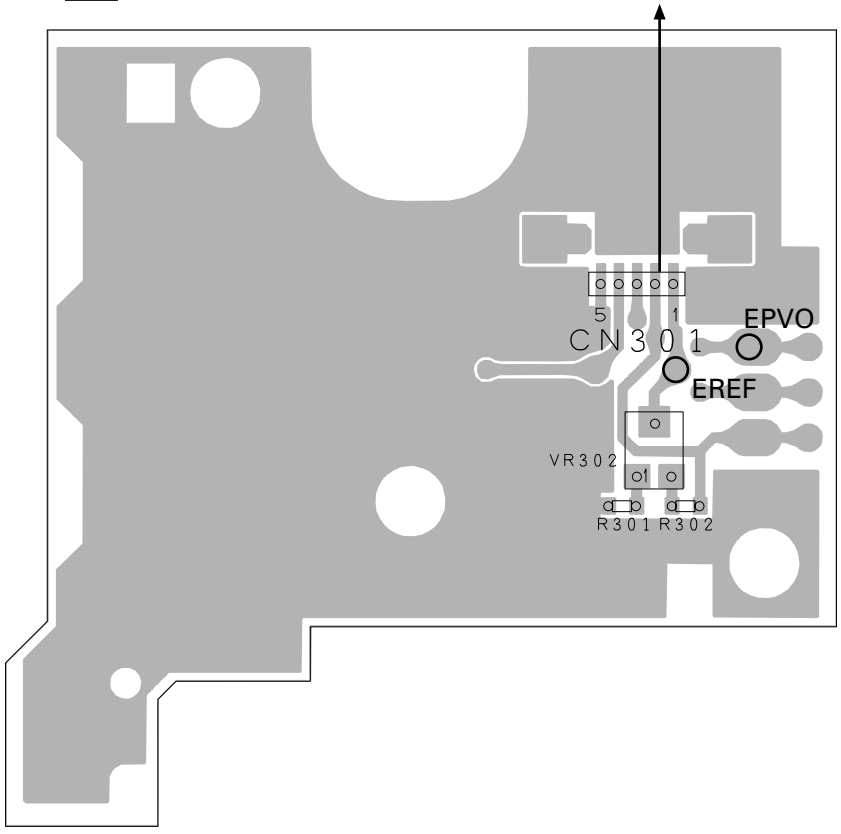
SIDE A

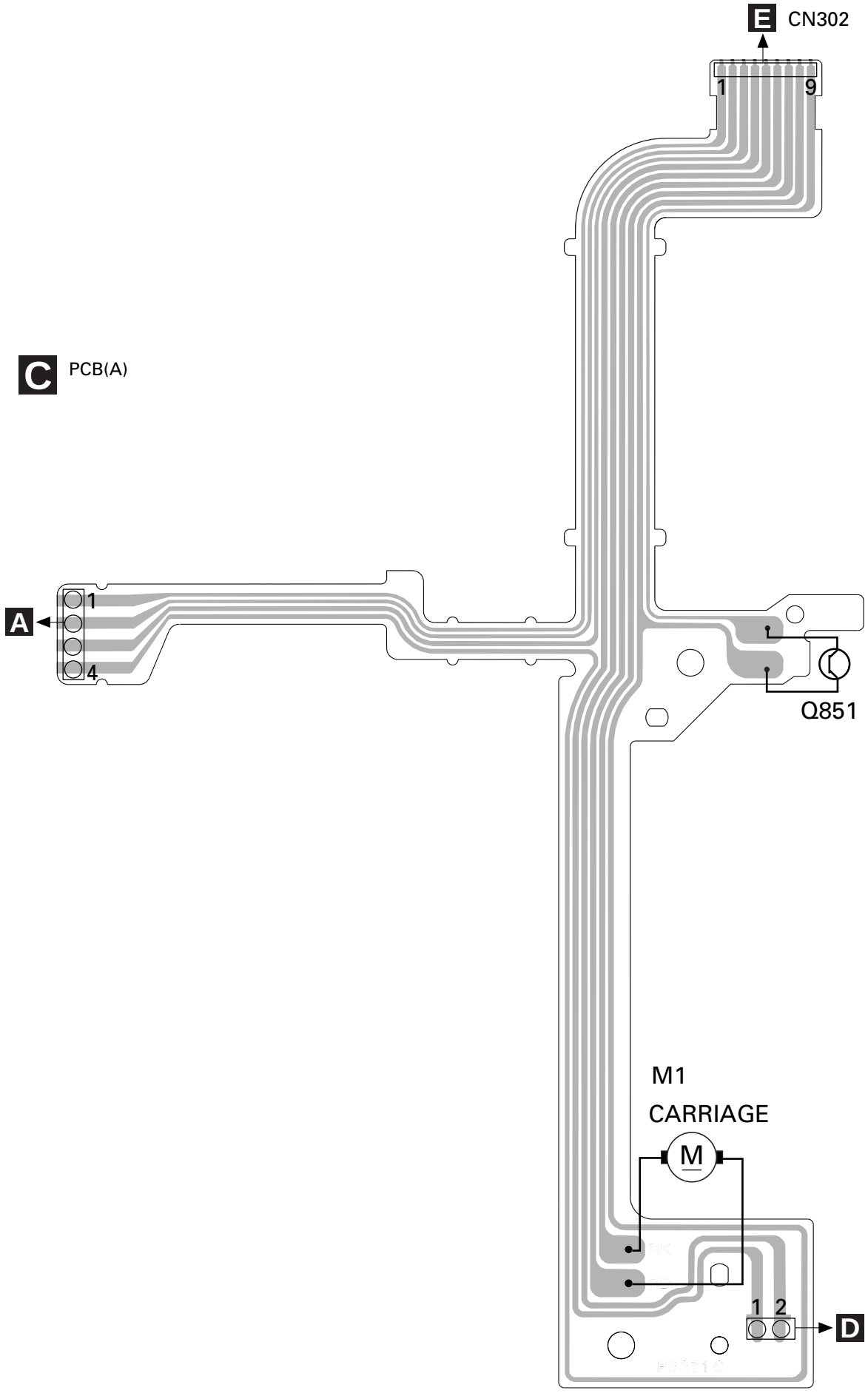


B PCB UNIT(B)

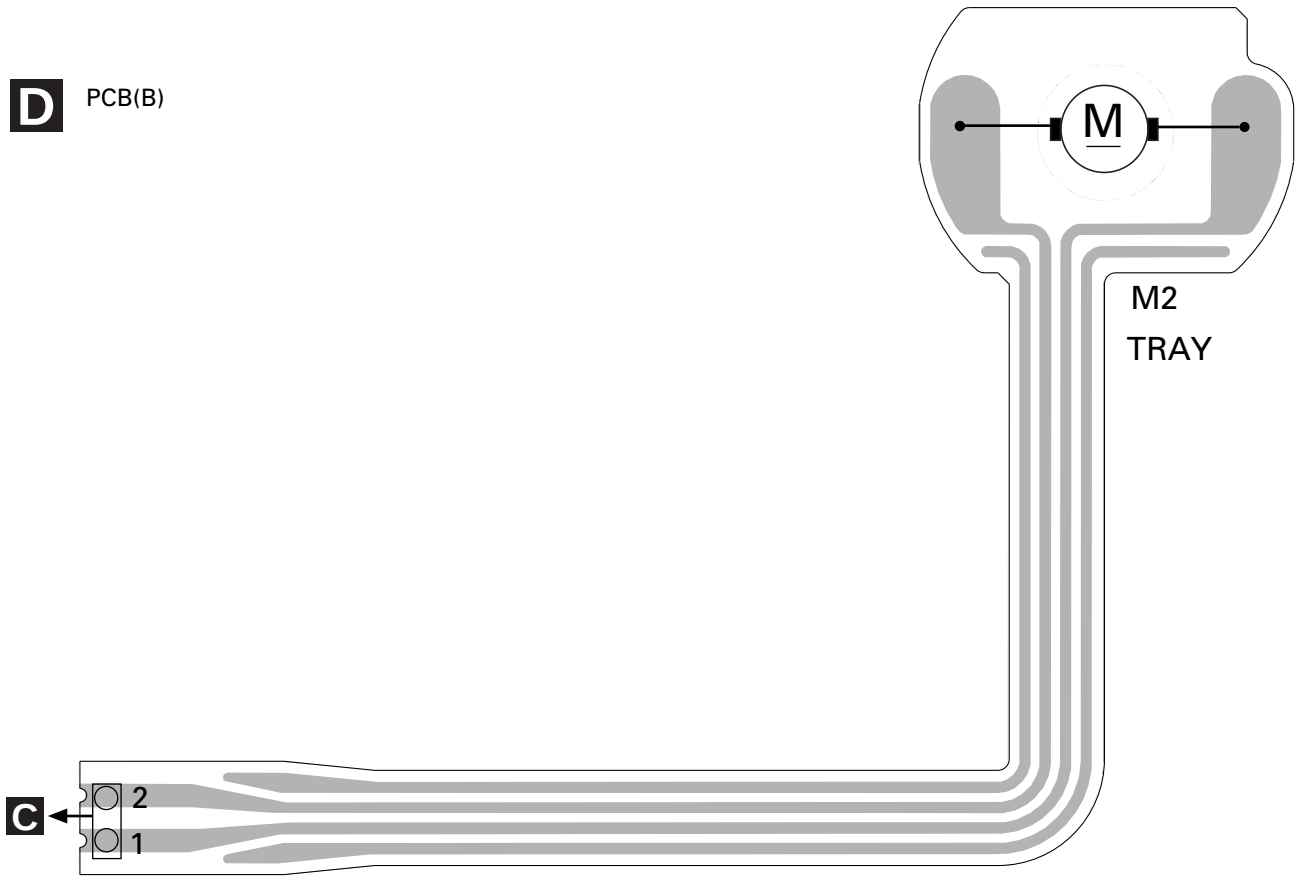
E CN310

SIDE B



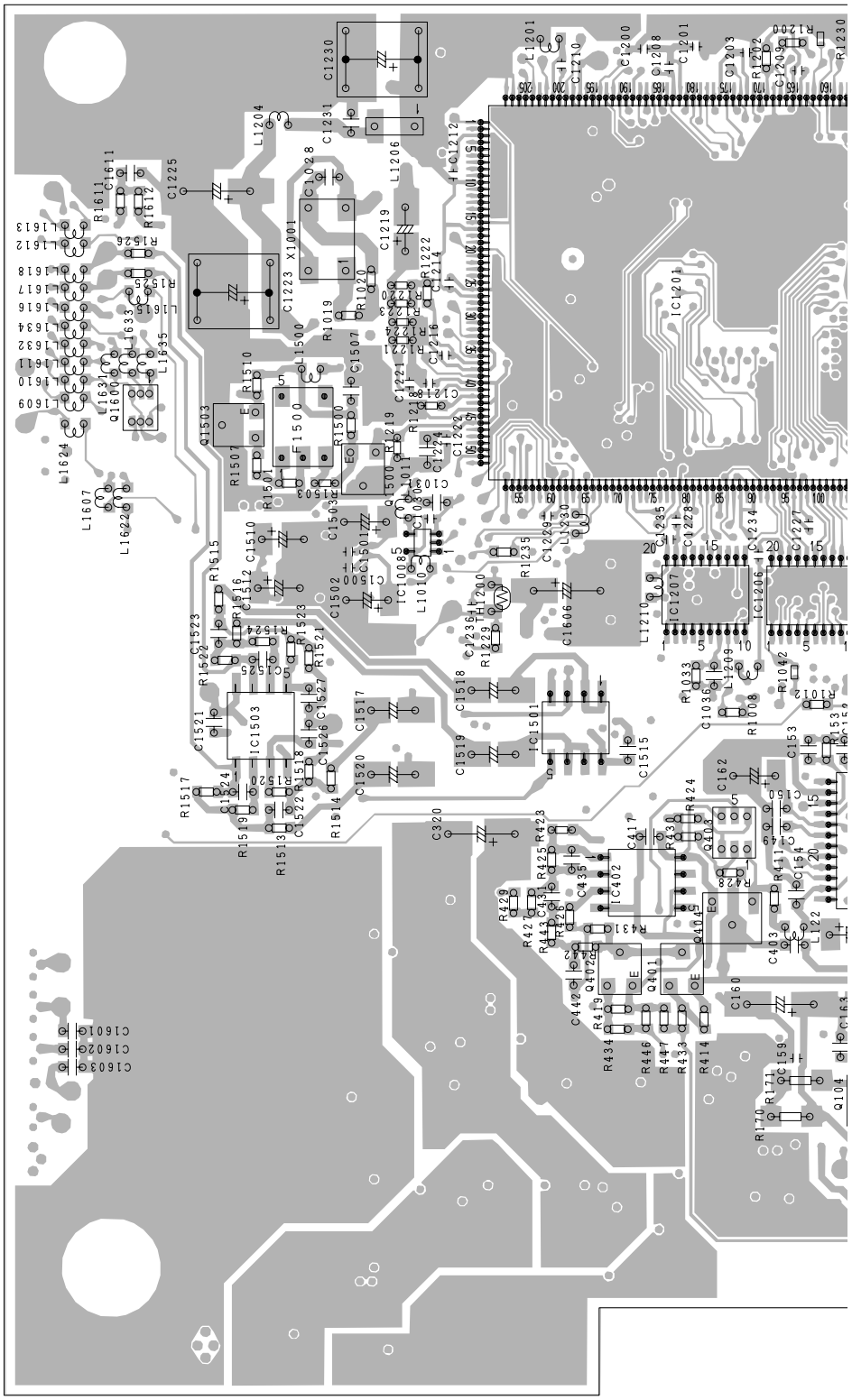

E CN302
1
9
C PCB(A)
A
1
4
Q851
M1
CARRIAGE
M
1 2
D

D PCB(B)

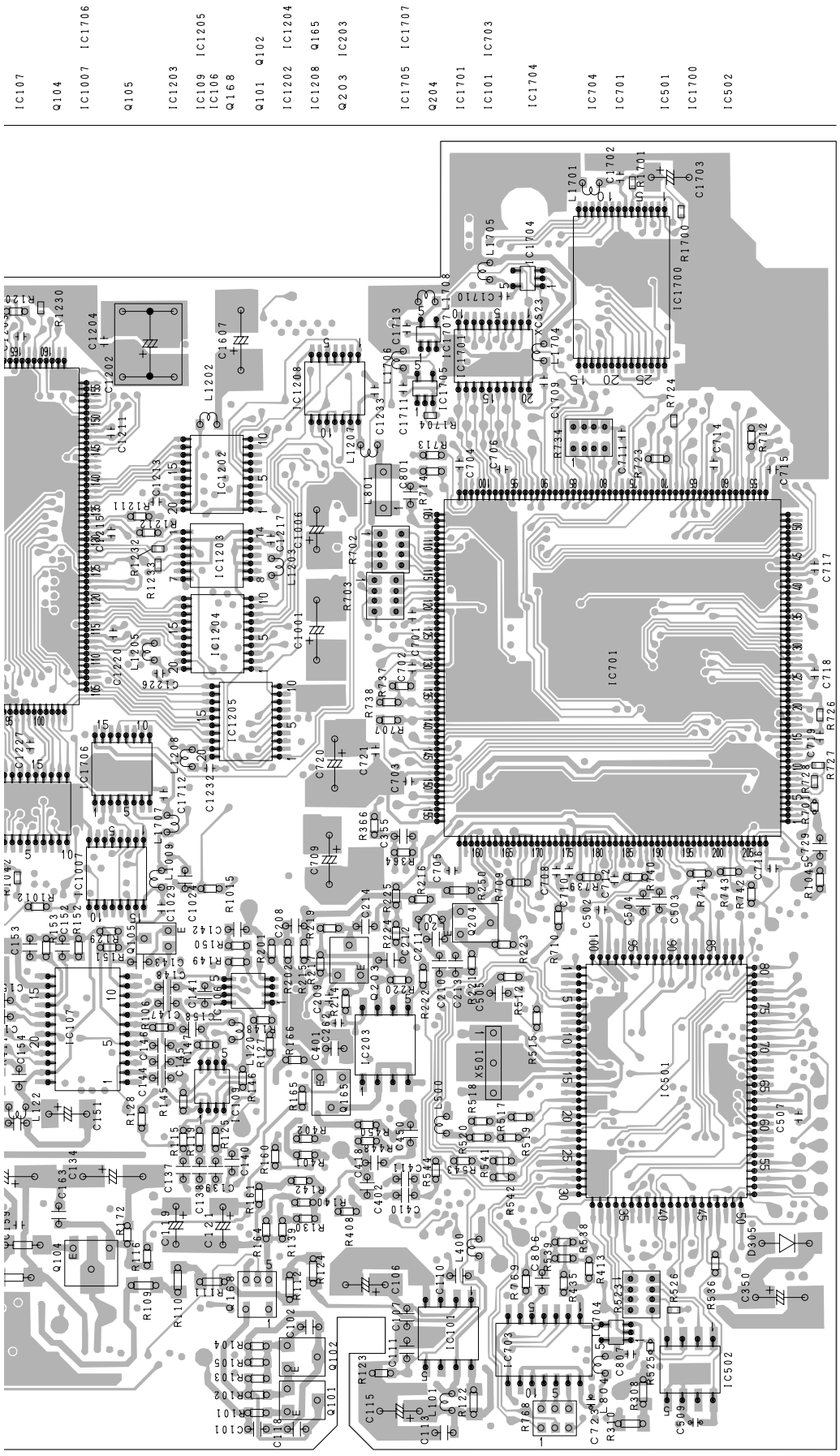


4.2 MAIN PCB

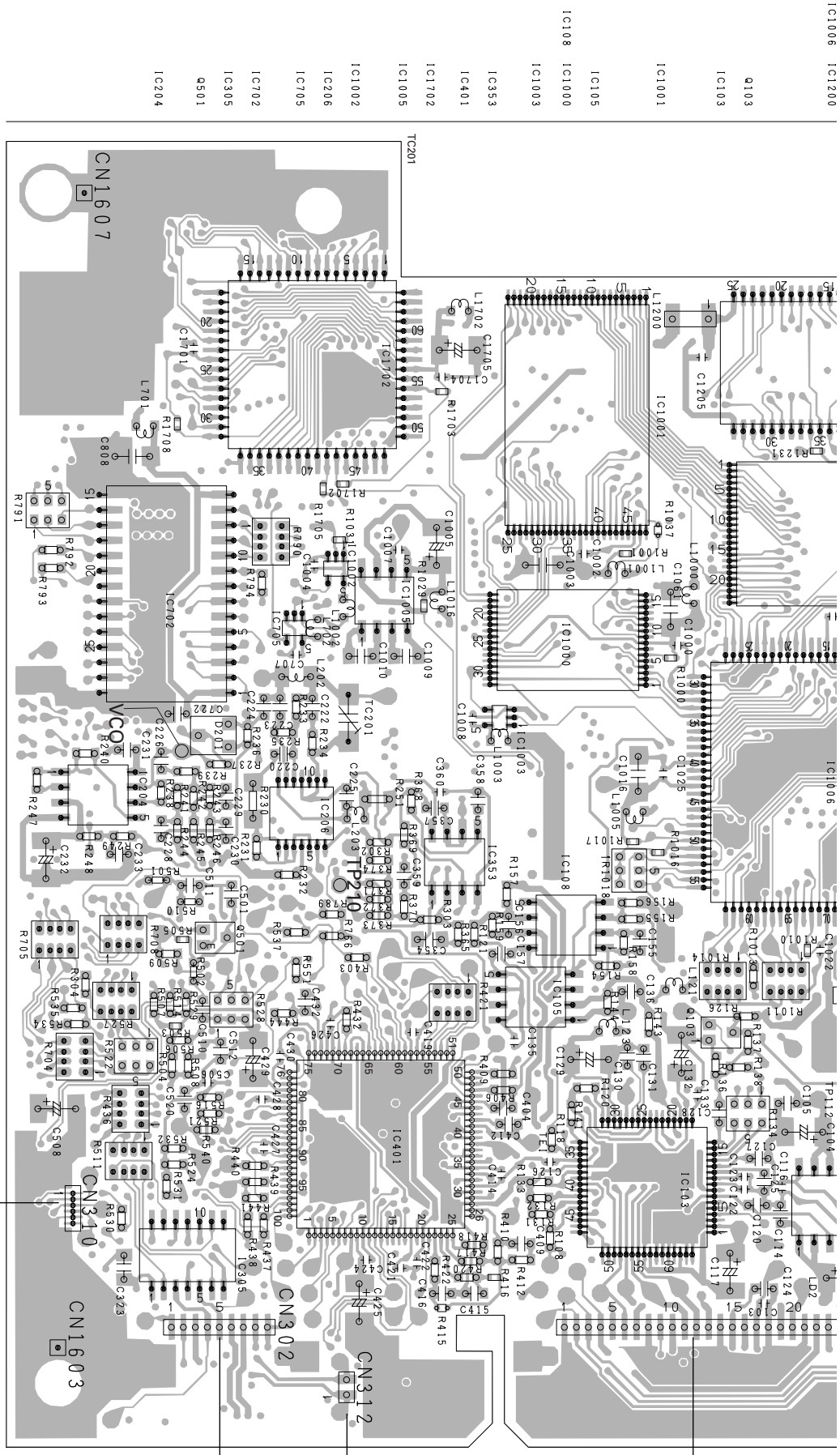
MAIN PCB



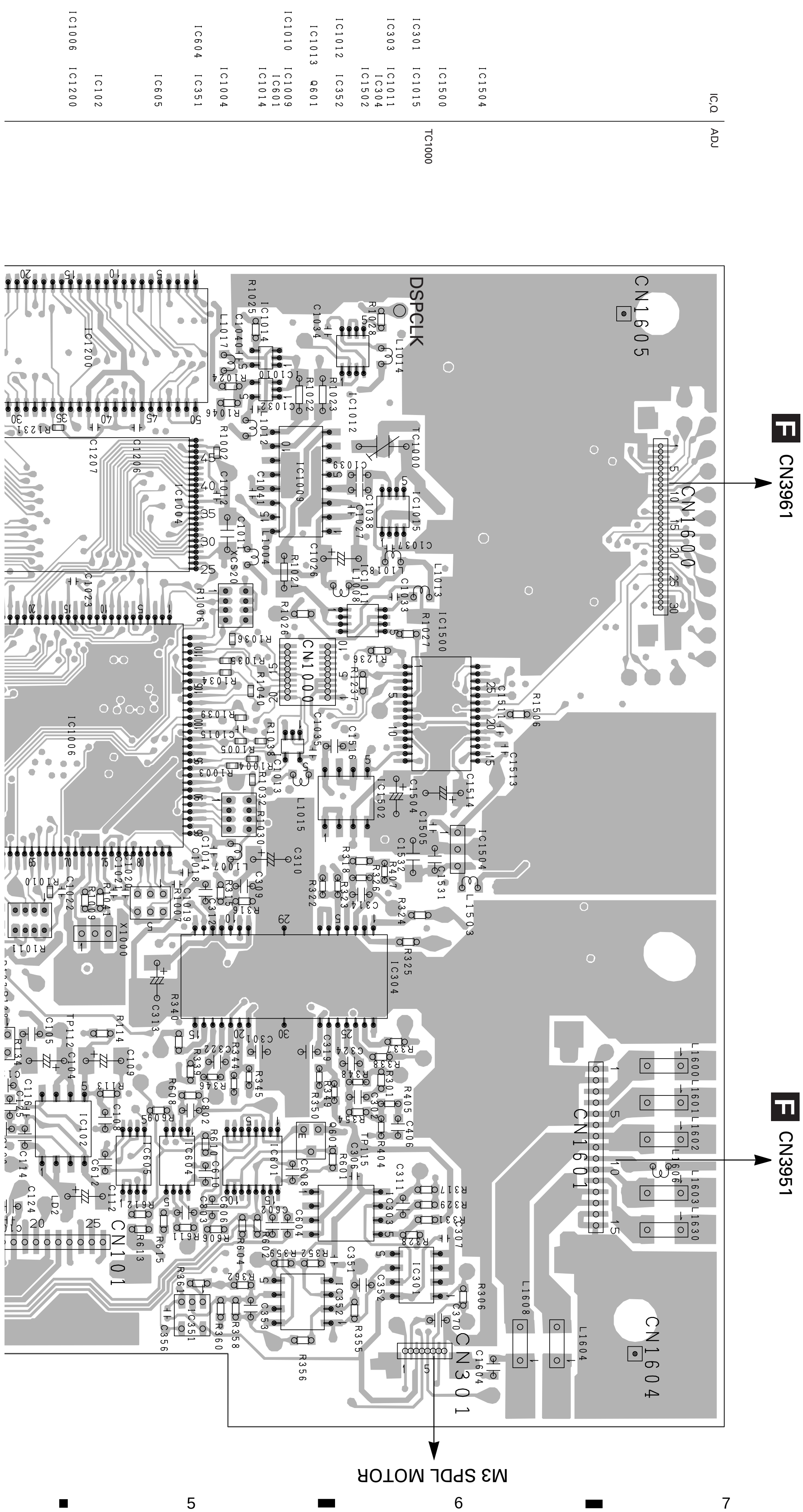
SIDE A


IC107
Q104
IC1007 IC1706
Q105
IC1203
IC109 IC1205
IC106
Q168
Q101 Q102
IC1202 IC1204
IC1208 Q165
Q203 IC203
IC1705 IC1707
Q204
IC1701
IC101 IC703
IC1704
IC704
IC701
IC501
IC1700
IC502

E MAIN PCB

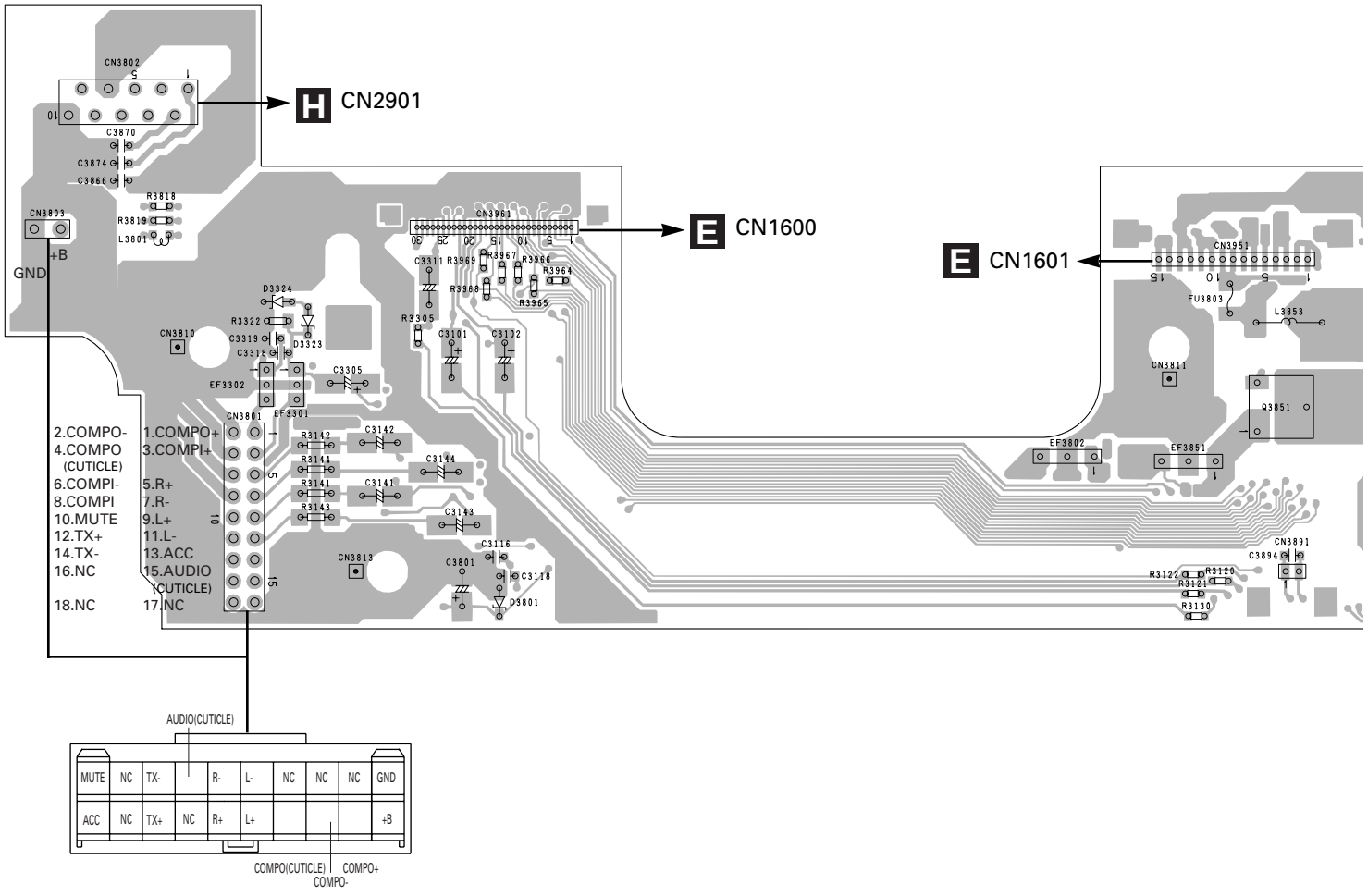


SIDE B

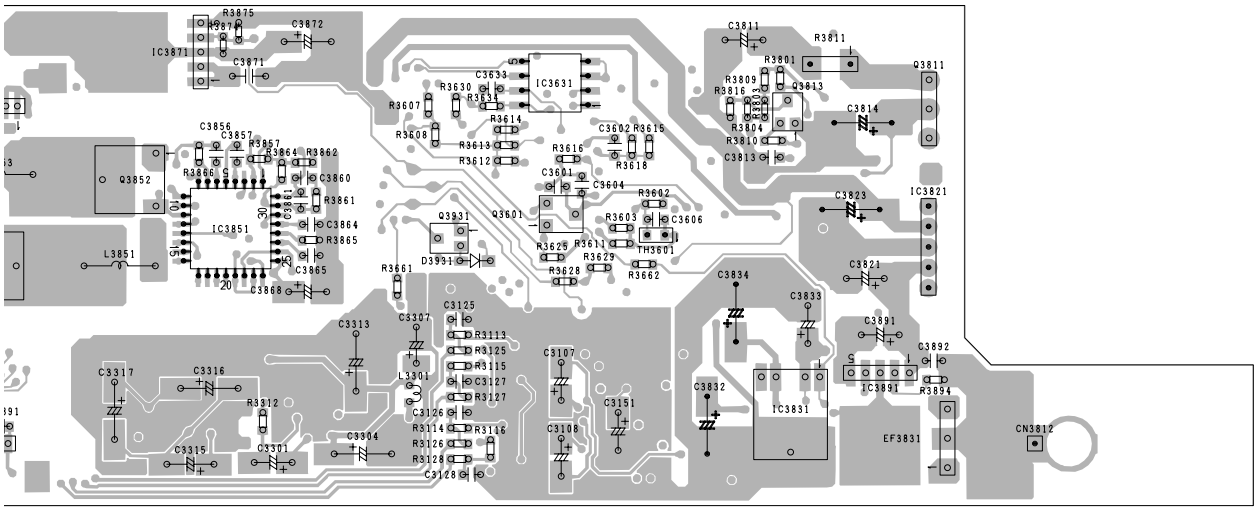

IC,Q
ADJ
IC1006 IC1200
IC102
IC605
IC604 IC351
IC1004
IC1014
IC1010 IC1009
IC601
IC1013 Q601
IC1012 IC352
IC1502
IC303 IC1011
IC304
IC301 IC1015
TC1000
IC1500
IC1504
DSPCLK
CN1605
CN1600
F
CN3961
CN1000
CN1601
F
CN3951
CN101
CN301
CN1604
M3 SPDL MOTOR

4.3 EXTENSION UNIT

F EXTENSION UNIT



SIDE A



IC,Q

IC3871

Q3811 IC3631

Q3813

Q3852

IC3821

Q3601 Q3931 IC3851

Q3851

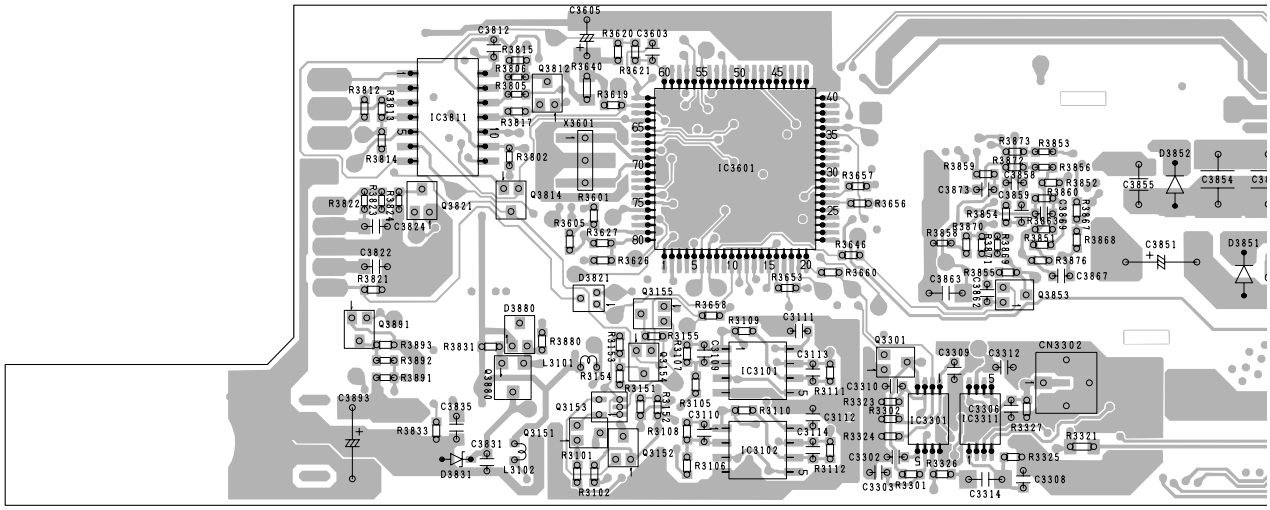
IC3891

IC3831

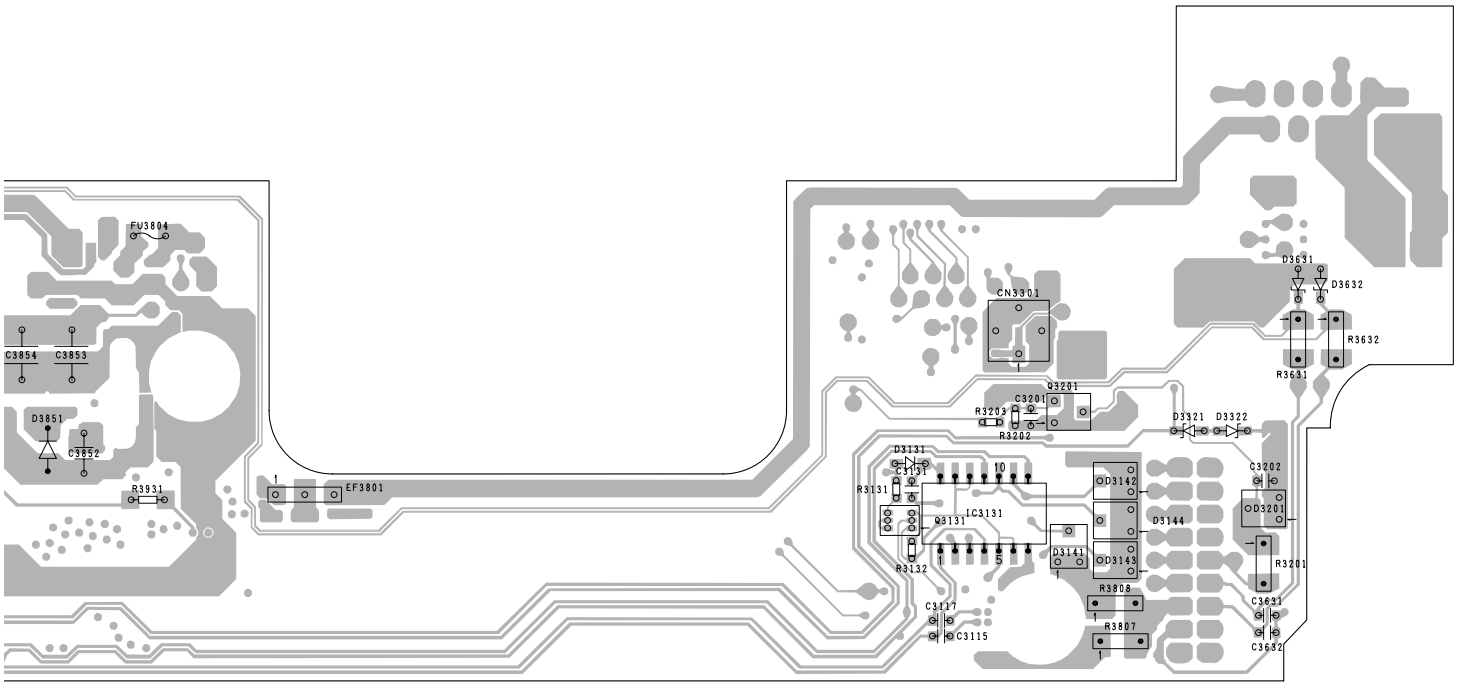
F EXTENSION UNIT

IC,Q

Q3812
IC3811
IC3601
Q3814
Q3201 Q3821
Q3853 Q3155
Q3891
Q3131 Q3301 IC3131
Q3880 IC3101
Q3153 Q3154
Q3151 IC3301 IC3311
Q3152 IC3102



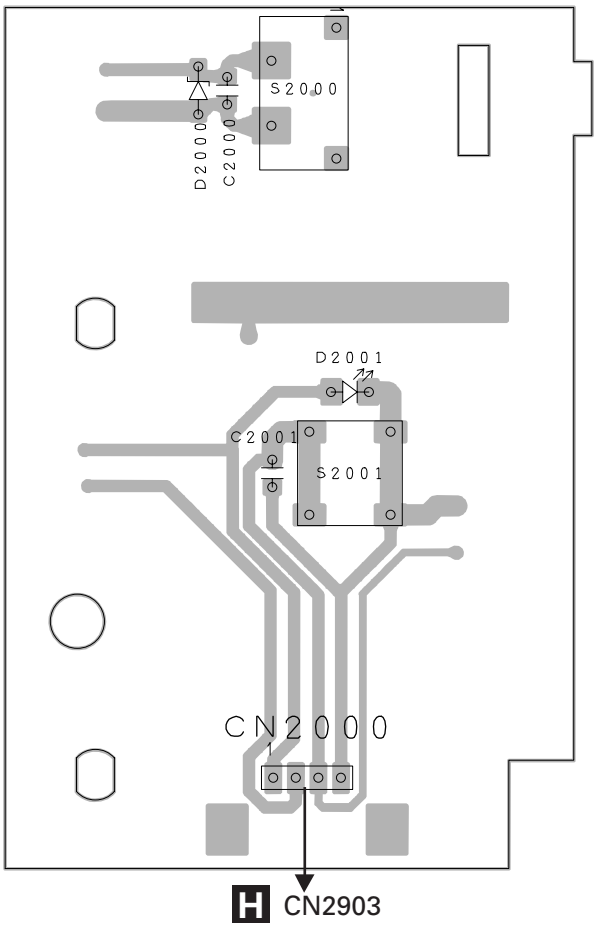
SIDE B


FV3804
C3854
C3853
D3851
C3852
R3931
EF3801
CN3301
D3631
D3632
R3632
R3631
Q3201
C3201
R3203
R3202
D3321
D3322
D3131
C3131
R3131
IC3131
Q3131
R3132
D3142
D3144
D3141
D3143
R3808
R3807
C3117
C3115
C3202
D3201
R3201
C3631
C3632

4.4 KEYBOARD PCB

G KEYBOARD PCB

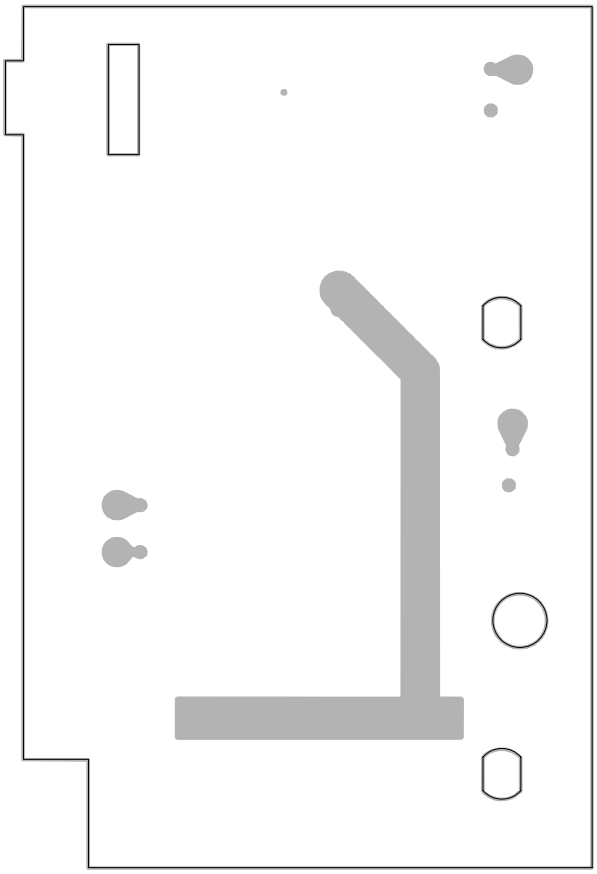
SIDE A



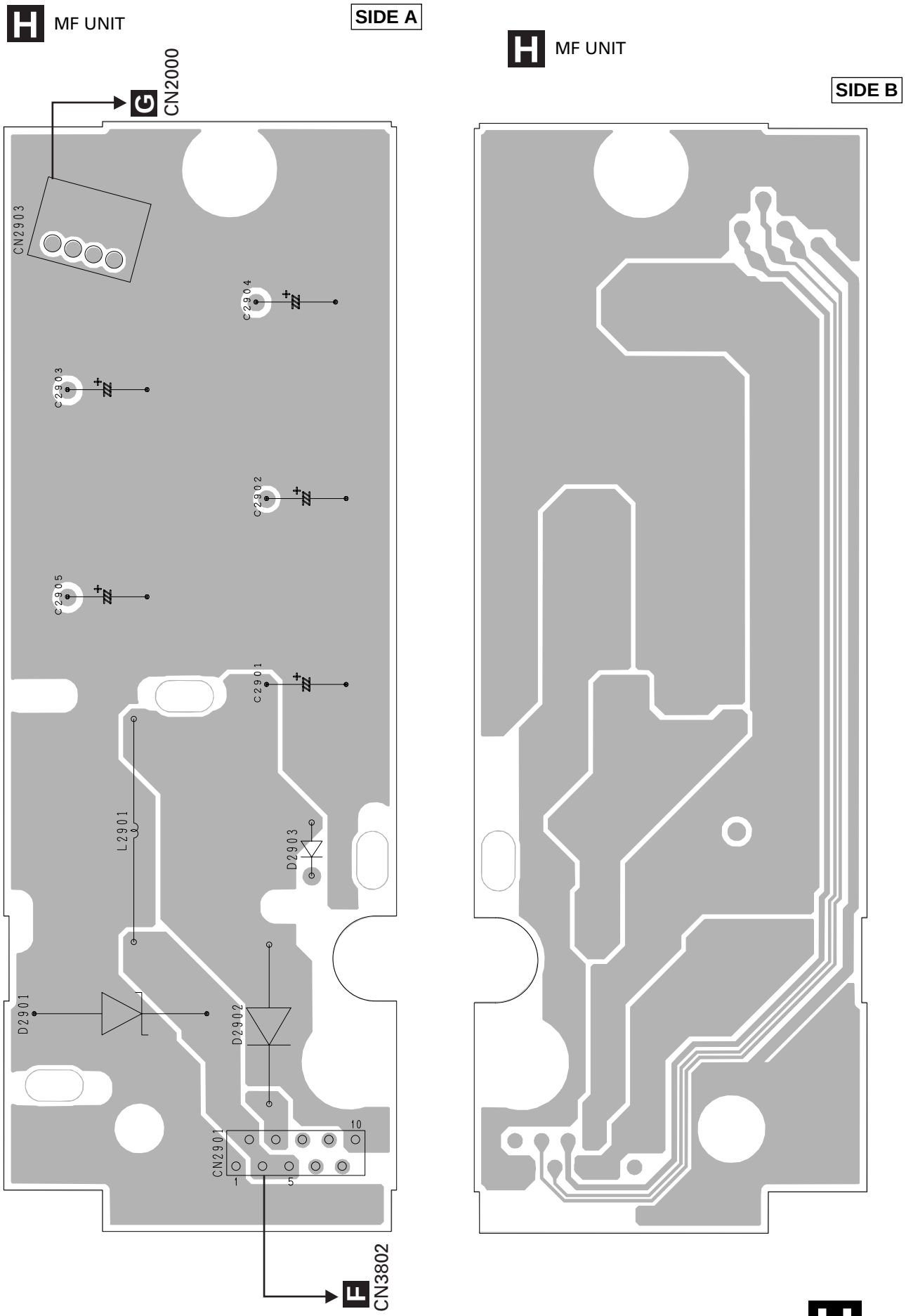
H CN2903

G KEYBOARD PCB

SIDE B



4.5 MF UNIT


H MF UNIT
SIDE A
G CN2000
CN2903
C2904
C2903
C2902
C2905
C2901
L2901
D2903
D2901
D2902
CN2901
10
1
5
F CN3802
H MF UNIT
SIDE B

5. ELECTRICAL PARTS LIST

NOTES:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

Chip Resistor

RS1/○S○○○J,RS1/○○S○○○J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

Main Unit
Consists of
Main PCB
Keyboard PCB

E G Unit Number : CWM7156
Unit Name : Main Unit

MISCELLANEOUS

=====Circuit Symbol and No.		===Part Name	Part No.
IC	101	IC	IR3C07N
IC	102	IC	NJM2904M
IC	103	IC	TA1254AF
IC	105	IC	NJM3404AM
IC	106	IC	TC7WU04FU
IC	107	IC	PA0065AM
IC	108	IC	NJM3404AM
IC	109	IC	TC7WU04FU
IC	203	IC	NJM2100M
IC	204	IC	NJM2100M
IC	206	IC	TC74VHCU04FT
IC	301	IC	TC4W53F
IC	303	IC	NJM2904M
IC	304	IC	BA6797FM
IC	305	IC	LB1836M
IC	351	IC	TC4S66F
IC	352	IC	MC33202D
IC	353	IC	MC33202D
IC	401	IC	TC9461F
IC	402	IC	NJM2904M
IC	501	IC	PD5642A
IC	601	IC	TC4053BFT
IC	604	IC	NJM3414AV
IC	605	IC	NJM3414AV
IC	701	IC	PD4995A
IC	702	IC	MSM514800CSL60JS
IC	704	IC	TC7SET08FU
IC	705	IC	TC7SH32FU
IC	1000	IC	TC551001CSTI-85L
IC	1001	IC	PD6332B
IC	1002	IC	TC7SET08FU
IC	1003	IC	TC7SHU04FU
IC	1004	IC	PD6310B
IC	1005	IC	MAX662AESA
IC	1006	IC	PD3411A
IC	1007	IC	TC74VHC139FT
IC	1008	IC	TC7SHU04FU
IC	1009	IC	CY2292SI-1A0
IC	1010	IC	TC7SHU04FU
IC	1011	IC	TC7WU04FU
IC	1012	IC	TC7WU04FU
IC	1013	IC	TC7SH08FU
IC	1014	IC	TC7SHU04FU
IC	1015	IC	TC7WU04FU
IC	1200	IC	MSM56V16160DP-10TS
IC	1201	IC	MB86373BPFV-G-BI
IC	1202	IC	TC74VHC541FT
IC	1203	IC	TC74VHCT08AFT
IC	1204	IC	TC74LCX245FT
IC	1205	IC	TC74LCX245FT
IC	1206	IC	TC74VHC541FT
IC	1207	IC	TC74VHC541FT
IC	1208	IC	TC74VHC00FT
IC	1500	IC	PE8001A1
IC	1501	IC	MC33202D
IC	1502	IC	MC33202D
IC	1503	IC	NJM2068MD
IC	1504	IC	HA178L05UA
IC	1700	IC	TC55257DFTI-85L
IC	1701	IC	HD74HC245T
IC	1702	IC	LC89513KP
IC	1704	IC	TC7S02FU
IC	1705	IC	TC7SHU04FU
IC	1706	IC	TC74VHC238FT
IC	1707	IC	TC7SHU04FU
Q	101	Transistor	2SD601A
Q	102	Transistor	2SB709A
Q	103	Transistor	DTC114EU
Q	104	Transistor	2SB1260
Q	165	Transistor	2SB709A
Q	168	Transistor	FMC5A
Q	203	Transistor	2SB709A
Q	204	Transistor	2SD601A
Q	401	Transistor	2SB709A
Q	402	Transistor	2SD1781K
Q	403	Transistor	IMX1
Q	404	Transistor	2SB1132
Q	501	Transistor	DTA114EU
Q	601	Transistor	DTC114EU
Q	1500	Transistor	2SA1037K
Q	1503	Transistor	2SA1037K
Q	1600	Transistor	UMH8N
D	201	Diode	KV1410-F1
D	305	Diode	1SR154-400
D	2000	Diode	UDZ18(B)
D	2001	LED	SML210FT(JK)
L	101	Inductor	CTF1473
L	120	Inductor	CTF1473
L	121	Inductor	CTF1473
L	122	Inductor	CTF1473
L	123	Inductor	CTF1473
L	201	Inductor	LCTB4R7K2125
L	202	Inductor	LCTA1R5J2520
L	203	Inductor	CTF1473
L	400	Inductor	CTF1473

=====Circuit Symbol and No.		===Part Name	Part No.
L	500	Inductor	CTF1473
L	701	Inductor	CTF1473
L	702	Inductor	CTF1473
L	801	Inductor	CTF1453
L	1000	Inductor	CTF1473
L	1001	Inductor	CTF1473
L	1002	Inductor	CTF1473
L	1003	Inductor	CTF1473
L	1004	Inductor	CTF1473
L	1005	Inductor	CTF1473
L	1007	Inductor	CTF1473
L	1008	Inductor	CTF1473
L	1009	Inductor	CTF1473
L	1010	Inductor	CTF1473
L	1011	Inductor	CTF1470
L	1012	Inductor	CTF1473
L	1013	Inductor	CTF1473
L	1014	Inductor	CTF1473
L	1015	Inductor	CTF1473
L	1016	Inductor	CTF1473
L	1017	Inductor	CTF1473
L	1018	Inductor	CTF1473
L	1200	Inductor	CTF1453
L	1201	Inductor	CTF1473
L	1202	Inductor	CTF1473
L	1203	Inductor	CTF1473
L	1204	Inductor	CTF1473
L	1205	Inductor	CTF1473
L	1206	Inductor	CTF1453
L	1207	Inductor	CTF1473
L	1208	Inductor	CTF1473
L	1209	Inductor	CTF1473
L	1210	Inductor	CTF1473
L	1500	Inductor	CTF1473
L	1503	Inductor	CTF1473
L	1600	Inductor	CTF1453
L	1601	Inductor	CTF1453
L	1602	Inductor	CTF1453
L	1603	Inductor	CTF1453
L	1604	Inductor	CTF1453
L	1606	Inductor	CTF1473
L	1607	Inductor	CTF1470
L	1608	Inductor	CTF1453
L	1609	Inductor	CTF1470
L	1610	Inductor	CTF1470
L	1611	Inductor	CTF1470
L	1612	Inductor	CTF1470
L	1613	Inductor	CTF1470
L	1615	Inductor	CTF1470
L	1616	Inductor	CTF1470
L	1617	Inductor	CTF1470
L	1618	Inductor	CTF1470
L	1622	Inductor	CTF1470
L	1624	Inductor	CTF1470
L	1630	Inductor	CTF1453
L	1631	Inductor	CTF1470
L	1632	Inductor	CTF1470
L	1633	Inductor	CTF1470
L	1634	Inductor	CTF1470
L	1635	Inductor	CTF1470
L	1701	Inductor	CTF1473
L	1702	Inductor	CTF1473
L	1704	Inductor	CTF1473
L	1705	Inductor	CTF1473
L	1706	Inductor	CTF1473

=====Circuit Symbol and No.		===Part Name	Part No.
L	1707	Inductor	CTF1473
L	1708	Inductor	CTF1473
TC	201	Trimmer	CCG1039
TC	1000	Trimmer	CCL1053
X	501	Radiator 10.00MHz	CSS1428
X	1000	Radiator 20.00MHz	CSS1470
X	1001	Radiator 13.824MHz	CSS1509
F	1500	Filter	CTF1515
S	2000	Spring Switch(CLOSE)	CSN1051
S	2001	Switch(EJECT)	CSG1110

RESISTORS

R	101	RS1/16S0R0J
R	102	RS1/16S102J
R	103	RS1/16S122J
R	104	RS1/16S182J
R	106	RS1/16S0R0J
R	108	RS1/16S0R0J
R	109	RS1/10S1R5J
R	110	RS1/10S1R5J
R	111	RS1/10S1R5J
R	112	RS1/10S1R5J
R	113	RS1/16S103J
R	114	RS1/16S103J
R	115	RS1/16S222J
R	116	RS1/16S0R0J
R	118	RS1/16S0R0J
R	119	RS1/16S222J
R	120	RS1/16S0R0J
R	121	RS1/16S393J
R	122	RS1/10S3R9J
R	123	RS1/16S104J
R	124	RS1/10S1R5J
R	125	RS1/16S222J
R	126	RS1/16S122J
R	127	RS1/16S222J
R	133	RS1/16S0R0J
R	134	RA3C101J
R	136	RS1/16S331J
R	137	RS1/16S112J
R	138	RS1/16S302J
R	139	RS1/16S0R0J
R	140	RS1/16S103J
R	141	RS1/16S101J
R	143	RS1/16S103J
R	144	RS1/16S103J
R	145	RS1/16S223J
R	146	RS1/16S223J
R	147	RS1/16S223J
R	148	RS1/16S223J
R	149	RS1/16S103J
R	150	RS1/16S222J
R	154	RS1/16S123J
R	155	RS1/16S182J
R	156	RS1/16S123J
R	157	RS1/16S822J
R	158	RS1/16S182J
R	159	RS1/16S203J
R	160	RS1/16S101J
R	164	RS1/16S203J
R	165	RS1/16S101J
R	166	RS1/16S222J
R	170	RS1/8S100J
R	171	RS1/8S120J
R	172	RS1/16S470J
R	201	RS1/16S0R0J
R	214	RS1/16S222J

=====Circuit Symbol and No.		===Part Name	Part No.
R	215		RS1/16S152J
R	216		RS1/16S471J
R	217		RS1/16S102J
R	220		RS1/16S105J
R	221		RS1/16S161J
R	222		RS1/16S103J
R	223		RS1/16S220J
R	224		RS1/16S223J
R	225		RS1/16S153J
R	230		RS1/8S0R0J
R	231		RS1/16S104J
R	232		RS1/16S220J
R	233		RS1/16S101J
R	234		RS1/16S0R0J
R	235		RS1/16S104J
R	236		RS1/16S104J
R	237		RS1/16S202J
R	238		RS1/16S105J
R	239		RS1/16S222J
R	240		RS1/16S103J
R	241		RS1/16S683J
R	242		RS1/16S153J
R	243		RS1/16S153J
R	244		RS1/16S223J
R	245		RS1/16S153J
R	246		RS1/16S103J
R	247		RS1/16S102J
R	248		RS1/16S153J
R	249		RS1/16S153J
R	250		RS1/10S0R0J
R	251		RS1/10S0R0J
R	301		RS1/16S622J
R	302		RS1/16S473J
R	303		RS1/16S434J
R	304		RS1/16S104J
R	306		RS1/16S101J
R	308		RS1/10S201J
R	310		RS1/10S221J
R	315		RS1/16S103J
R	316		RS1/16S103J
R	317		RS1/16S822J
R	318		RS1/16S0R0J
R	322		RN1/16SE1002D
R	323		RN1/16SE1002D
R	324		RS1/16S0R0J
R	325		RS1/16S0R0J
R	326		RN1/16SE1002D
R	328		RS1/16S822J
R	329		RS1/16S822J
R	331		RS1/16S822J
R	337		RS1/16S0R0J
R	338		RS1/16S0R0J
R	339		RS1/16S0R0J
R	340		RS1/16S0R0J
R	344		RN1/16SE1002D
R	345		RN1/16SE1002D
R	346		RN1/16SE1002D
R	348		RN1/16SE1202D
R	349		RN1/16SE1202D
R	350		RN1/16SE1202D
R	352		RS1/16S103J
R	354		RS1/16S0R0J
R	355		RS1/16S103J
R	356		RS1/16S103J
R	358		RS1/16S103J

=====Circuit Symbol and No.		===Part Name	Part No.
R	359		RS1/16S103J
R	360		RS1/16S114J
R	361		RS1/16S153J
R	362		RS1/16S243J
R	364		RS1/16S624J
R	365		RS1/16S624J
R	366		RS1/16S104J
R	368		RS1/16S333J
R	369		RS1/16S333J
R	370		RS1/16S101J
R	372		RS1/16S103J
R	373		RS1/16S333J
R	374		RS1/16S103J
R	401		RS1/16S101J
R	402		RS1/16S101J
R	404		RN1/16SE1202D
R	405		RN1/16SE3300D
R	406		RS1/16S332J
R	407		RN1/16SE1002D
R	408		RS1/16S0R0J
R	409		RS1/16S153J
R	410		RS1/16S225J
R	411		RS1/16S272J
R	412		RS1/16S333J
R	413		RS1/16S104J
R	414		RS1/16S103J
R	416		RS1/16SS473J
R	417		RS1/16S225J
R	418		RS1/16S104J
R	419		RS1/16S103J
R	420		RS1/16S103J
R	421	22Ω	CCN1111
R	423		RN1/16SE1002D
R	424		RS1/16S272J
R	425		RS1/16S103J
R	426		RS1/16S472J
R	427		RS1/16S103J
R	428		RS1/16S472J
R	429		RS1/16S0R0J
R	430		RS1/16S472J
R	431		RS1/16S472J
R	432		RS1/16S0R0J
R	433		RS1/16S223J
R	434		RS1/16S223J
R	435		RS1/16S104J
R	436	22Ω	CCN1111
R	439		RS1/16S220J
R	440		RS1/16S220J
R	441		RS1/16S103J
R	442		RS1/16S103J
R	443		RS1/16S622J
R	448		RS1/16S221J
R	450		RS1/16S103J
R	501		RN1/16SE3902D
R	502		RN1/16SE1502D
R	503		RS1/16SS473J
R	504		RS1/16S683J
R	505		RS1/16SS473J
R	506		RS1/16S103J
R	507		RS1/16S222J
R	508		RS1/16S222J
R	509		RS1/16S222J
R	510		RN1/16SE1002D
R	511	3.3kΩ	CCN1122
R	512		RS1/16S104J

=====Circuit Symbol and No.		===Part Name	Part No.
R	514		RS1/16S682J
R	515		RS1/16S102J
R	516		RS1/16S102J
R	517		RS1/16S222J
R	518		RS1/16S104J
R	519		RS1/16S222J
R	520		RS1/16S104J
R	521		RS1/16S103J
R	522		RA3C104J
R	523	1kΩ	CCN1120
R	524		RS1/16S103J
R	526		RS1/16SS473J
R	527	22Ω	CCN1111
R	528		RA3C473J
R	529		RS1/16S682J
R	530		RS1/16S103J
R	531		RS1/16S103J
R	532		RS1/16S103J
R	534		RS1/16S104J
R	535		RS1/16S104J
R	536		RS1/16S104J
R	537		RS1/16S104J
R	540		RS1/16S103J
R	541		RS1/16S104J
R	542		RS1/16S104J
R	543		RS1/16S104J
R	544		RS1/16S104J
R	551		RS1/16S220J
R	601		RS1/16S103J
R	602		RS1/16S154J
R	604		RS1/16S154J
R	606		RS1/16S154J
R	608		RS1/16S303J
R	609		RS1/16S153J
R	610		RS1/16S303J
R	611		RS1/16S153J
R	612		RS1/16S153J
R	613		RS1/16S153J
R	615		RS1/16S153J
R	702	22Ω	CCN1111
R	703	22Ω	CCN1111
R	704	22Ω	CCN1111
R	705	22Ω	CCN1111
R	707		RS1/16S220J
R	708	22Ω	CCN1111
R	709		RS1/16S0R0J
R	710		RS1/16S102J
R	712		RS1/16S103J
R	713		RS1/16S220J
R	714		RS1/16S220J
R	723		RS1/16S0R0J
R	724		RS1/16SS473J
R	726		RS1/16SS473J
R	727		RS1/16SS473J
R	728		RS1/16SS473J
R	734	10kΩ	CCN1125
R	737		RS1/16S103J
R	739		RS1/16S103J
R	740		RS1/16S103J
R	741		RS1/16S103J
R	742		RS1/16S103J
R	743		RS1/16S103J
R	789		RS1/16S0R0J
R	790	10Ω	CCN1133
R	791		RA3C100J

=====Circuit Symbol and No.		===Part Name	Part No.
R	792		RS1/16S100J
R	793		RS1/16S100J
R	794		RS1/16S100J
R	1000		RS1/16SS473J
R	1001		RS1/16SS473J
R	1002		RS1/16SS473J
R	1003		RS1/16SS473J
R	1004		RS1/16SS473J
R	1005		RS1/16SS473J
R	1006	47kΩ	CCN1131
R	1007		RA3C471J
R	1008		RS1/16S472J
R	1009		RS1/16S103J
R	1010		RS1/16SS473J
R	1011	47kΩ	CCN1131
R	1012		RS1/16S102J
R	1013		RS1/16S470J
R	1014	47kΩ	CCN1131
R	1015		RS1/16S332J
R	1016		RS1/16SS473J
R	1017		RS1/16SS473J
R	1018		RA3C473J
R	1019		RS1/16S105J
R	1020		RS1/16S102J
R	1021		RS1/8S470J
R	1022		RS1/8S470J
R	1023		RS1/8S470J
R	1025		RS1/16S0R0J
R	1026		RS1/16S0R0J
R	1027		RS1/16S0R0J
R	1028		RS1/16S0R0J
R	1029		RS1/16SS473J
R	1030	47kΩ	CCN1131
R	1031		RS1/16SS473J
R	1032		RS1/16SS473J
R	1033		RS1/16S472J
R	1034		RS1/16SS473J
R	1035		RS1/16SS473J
R	1036		RS1/16SS473J
R	1038		RS1/16SS473J
R	1039		RS1/16SS473J
R	1040		RS1/16SS473J
R	1041		RS1/16S0R0J
R	1042		RS1/16SS473J
R	1046		RS1/16S0R0J
R	1200		RS1/16S0R0J
R	1202		RS1/16S201J
R	1212		RS1/16S220J
R	1218		RN1/16SE2701D
R	1219		RN1/16SE1600D
R	1220		RN1/16SE2701D
R	1221		RN1/16SE2201D
R	1222		RS1/16S0R0J
R	1223		RN1/16SE2701D
R	1224		RN1/16SE2201D
R	1230		RS1/16SS473J
R	1231		RS1/16SS473J
R	1232		RS1/16SS473J
R	1233		RS1/16SS473J
R	1235		RS1/16S0R0J
R	1236		RS1/16S0R0J
R	1237		RS1/16S0R0J
R	1500		RS1/16S222J
R	1501		RS1/16S152J
R	1503		RN1/16SE3300D

=====Circuit Symbol and No.	===Part Name	Part No.
R 1506		RS1/16S0R0J
R 1507		RS1/16S101J
R 1510		RS1/16S222J
R 1513		RS1/16S622J
R 1514		RS1/16S622J
R 1515		RS1/16S622J
R 1516		RS1/16S622J
R 1517		RS1/16S622J
R 1518		RS1/16S622J
R 1519		RS1/16S622J
R 1520		RS1/16S622J
R 1521		RS1/16S622J
R 1522		RS1/16S622J
R 1523		RS1/16S622J
R 1524		RS1/16S622J
R 1525		RS1/16S101J
R 1526		RS1/16S101J
R 1611		RS1/16S0R0J
R 1612		RS1/16S0R0J
R 1700		RS1/16SS473J
R 1701		RS1/16SS473J
R 1702		RS1/16SS473J
R 1703		RS1/16SS473J
R 1704		RS1/16SS473J
R 1705		RS1/16SS473J
R 1708		RS1/16SS473J

CAPACITORS

=====Circuit Symbol and No.	===Part Name	Part No.
C 101		CKSRYB333K16
C 102		CKSRYB333K16
C 103		CKSSYB104K10
C 104		CSZSR100M16
C 105		CKSRYB103K50
C 106		CEV220M6R3
C 107		CKSRYB103K50
C 108		CKSRYB103K50
C 109		CSZSR100M16
C 110		CKSRYB333K16
C 111		CKSRYB183K25
C 112		CSZSR470M6R3
C 113		CKSRYB103K50
C 114		CKSRYB103K50
C 115		CEV220M6R3
C 116		CKSSYB104K10
C 117		CSZSR2R2M20
C 119		CSZSR470M6R3
C 120		CKSRYB103K50
C 121		CSZSR1R0M35
C 122		CKSSYB104K10
C 123		CKSSYB104K10
C 124		CKSRYB105K6R3
C 125		CKSRYB102K50
C 126		CKSSYB104K10
C 127		CKSRYB102K50
C 128		CKSRYB102K50
C 129		CSZSR100M16
C 130		CKSRYB222K50
C 131		CKSRYB222K50
C 132		CSZSR100M16
C 133		CKSSYB104K10
C 134		CEV101M10
C 135		CKSSYB104K10
C 136		CCSRCH101J50
C 137		CKSRYB222K50
C 138		CKSRYB222K50
C 139		CKSRYB222K50
C 140		CKSRYB222K50
C 141		CKSRYB103K50

=====Circuit Symbol and No.	===Part Name	Part No.
C 142		CKSRYB332K50
C 143		CKSRYB333K16
C 144		CCSRCH121J50
C 145		CCSRCH121J50
C 146		CCSRCH121J50
C 147		CCSRCH121J50
C 148		CCSRCH121J50
C 149		CCSRCH471J50
C 150		CKSRYB333K16
C 151		CSZSR100M16
C 152		CKSRYB103K50
C 153		CKSRYB103K50
C 154		CKSRYB103K50
C 155		CCSRCH821J50
C 156		CCSRCH151J50
C 157		CKSRYB333K16
C 158		CKSRYB103K50
C 159		CKSSYB104K10
C 160		CEV470M10
C 162		CSZSR220M10
C 163		CKSRYB102K50
C 208		CKSRYB822K50
C 209		CKSSYB104K10
C 211		CCSRCH7R0D50
C 212		CKSQYB105K16
C 213		CCSRCH180J50
C 214		CKSRYB102K50
C 220		CKSRYB102K50
C 222		CCSRCH150J50
C 223		CKSRYB103K50
C 224		CKSRYB103K50
C 225		CKSRYB333K16
C 226		CKSRYB104K16
C 228		CCSRCH470J50
C 229		CKSRYB104K16
C 230		CKSRYB104K16
C 231		CKSRYB333K16
C 232		CSZSR1R0M35
C 233		CKSRYB104K16
C 262		CKSSYB104K10
C 301		CKSRYB104K16
C 302		CKSRYB224K10
C 306		CKSSYB104K10
C 307		CKSSYB104K10
C 309		CKSRYB103K50
C 310		CSZSR100M16
C 311		CKSRYB123K25
C 312		CKSRYB103K50
C 313		CSZSR100M16
C 314		CKSRYB153K25
C 319		CKSRYB103K50
C 320		CEV101M10
C 322		CCSRCH101J50
C 323		CKSQYB224K16
C 324		CKSRYB472K50
C 350		CEV220M10
C 351		CKSSYB104K10
C 352		CCSRCH101J50
C 353		CKSRYB103K50
C 354		CKSQYB334K16
C 355		CCSRCH161J50
C 356		CKSSYB104K10
C 357		CKSRYB223K25
C 358		CKSRYB472K50
C 359		CKSRYB104K16

=====Circuit Symbol and No.	===Part Name	Part No.
C 360		CKSSYB104K10
C 370		CKSRYB104K16
C 401		CKSRYB333K16
C 402		CKSRYB103K50
C 403		CKSRYB103K50
C 404		CKSRYB333K16
C 406		CKSRYB273K25
C 409		CKSRYB153K25
C 410		CKSRYB103K50
C 411		CKSRYB102K50
C 412		CKSRYB104K16
C 414		CKSSYB104K10
C 415		CCSRCH470J50
C 417		CKSRYB103K50
C 418		CCSRCH101J50
C 419		CKSSYB104K10
C 421		CKSSYB104K10
C 422		CKSSYB104K10
C 424		CKSSYB104K10
C 425		CSZSR100M16
C 426		CKSSYB104K10
C 427		CKSSYB104K10
C 428		CKSSYB104K10
C 429		CSZSR100M16
C 430		CKSSYB104K10
C 431		CKSRYB103K50
C 432		CCSRCH101J50
C 435		CCSRCH101J50
C 442		CKSRYB273K25
C 450		CKSRYB152K50
C 501		CKSRYB103K50
C 502		CKSSYB104K10
C 503		CKSRYB473K16
C 504		CKSRYB473K16
C 505		CKSRYB103K50
C 506		CKSSYB104K10
C 507		CKSSYB104K10
C 508		CSZSR100M16
C 510		CKSRYB103K50
C 511		CKSRYB103K50
C 512		CKSRYB102K50
C 520		CKSRYB104K16
C 602		CKSRYB104K16
C 604		CKSRYB104K16
C 606		CKSRYB104K16
C 608		CKSRYB104K16
C 610		CKSRYB104K16
C 612		CKSRYB104K16
C 701		CKSSYB104K10
C 702		CKSSYB104K10
C 703		CKSSYB104K10
C 704		CKSSYB104K10
C 705		CKSSYB104K10
C 706		CKSSYB104K10
C 707		CKSSYB104K10
C 708		CKSSYB104K10
C 709		CEV101M4
C 710		CKSSYB104K10
C 711		CKSSYB104K10
C 712		CKSSYB104K10
C 714		CKSSYB104K10
C 715		CKSSYB104K10
C 716		CKSSYB104K10
C 717		CKSSYB104K10
C 718		CKSSYB104K10

=====Circuit Symbol and No.	===Part Name	Part No.
C 719		CKSSYB104K10
C 720		CEV101M4
C 721		CKSSYB104K10
C 722		CKSRYB103K50
C 729		CCSRCH101J50
C 801		CCSRCH101J50
C 802		CCSRCH101J50
C 803		CCSRCH221J50
C 807		CKSSYB104K10
C 808		CKSYB106K6R3
C 1000		CKSSYB104K10
C 1001		CEV101M6R3
C 1002		CKSSYB104K10
C 1003		CKSYB106K6R3
C 1004		CKSSYB104K10
C 1005		CSZSR100M16
C 1006		CEV4R7M35
C 1007		CKSSYB104K10
C 1008		CKSSYB104K10
C 1009		CKSQYB224K25
C 1010		CKSQYB224K25
C 1011		CKSYB106K6R3
C 1012		CKSSYB104K10
C 1014		CKSSYB104K10
C 1015		CKSSYB104K10
C 1016		CKSYB106K6R3
C 1018		CKSSYB104K10
C 1019		CKSSYB104K10
C 1020		CKSSYB104K10
C 1021		CKSSYB104K10
C 1022		CKSSYB104K10
C 1023		CKSSYB104K10
C 1024		CCSRCH100D50
C 1025		CKSSYB104K10
C 1026		CSZSR100M16
C 1027		CKSSYB104K10
C 1028		CCSRCH180J50
C 1029		CKSSYB104K10
C 1030		CKSSYB104K10
C 1031		CCSRCH101J50
C 1032		CKSSYB104K10
C 1033		CKSSYB104K10
C 1034		CKSSYB104K10
C 1035		CKSSYB104K10
C 1036		CKSRYB103K50
C 1037		CKSSYB104K10
C 1038		CCSRCH510J50
C 1039		CCSRCK1R0C50
C 1040		CKSSYB104K10
C 1041		CKSSYB104K10
C 1061		CKSYB106K6R3
C 1200		CKSSYB104K10
C 1201		CKSSYB104K10
C 1202	68µF/6.3V	CCH1385
C 1203		CKSSYB104K10
C 1204		CKSSYB104K10
C 1205		CKSSYB104K10
C 1206		CKSSYB104K10
C 1207		CKSSYB104K10
C 1208		CKSSYB104K10
C 1209		CKSSYB104K10
C 1210		CKSSYB104K10
C 1211		CKSSYB104K10
C 1212		CKSSYB104K10
C 1213		CKSSYB104K10

=====Circuit Symbol and No.	===Part Name	Part No.
C 1214		CKSSYB104K10
C 1215		CKSSYB104K10
C 1216		CKSSYB104K10
C 1217		CKSSYB104K10
C 1218		CKSSYB104K10
C 1219		CEV470M4
C 1220		CKSSYB104K10
C 1221		CKSSYB104K10
C 1222		CKSSYB104K10
C 1223	68µF/6.3V	CCH1385
C 1224		CKSQYB105K16
C 1225		CEV221M4
C 1226		CKSSYB104K10
C 1227		CKSSYB104K10
C 1228		CKSSYB104K10
C 1229		CKSSYB104K10
C 1230	68µF/6.3V	CCH1385
C 1231		CKSRYB103K50
C 1232		CKSSYB104K10
C 1233		CKSSYB104K10
C 1234		CKSSYB104K10
C 1235		CKSSYB104K10
C 1500		CKSSYB104K10
C 1501		CKSSYB104K10
C 1502		CSZSR100M16
C 1503		CSZSR100M16
C 1504		CSZSR100M16
C 1505		CKSSYB104K10
C 1507		CKSRYB104K16
C 1510		CSZSR100M16
C 1511		CKSSYB104K10
C 1512		CSZSR100M16
C 1513		CKSSYB104K10
C 1514		CSZSR100M16
C 1515		CKSRYB104K16
C 1516		CKSRYB104K16
C 1517		CEVNP4R7M16
C 1518		CEVNP4R7M16
C 1519		CEVNP4R7M16
C 1520		CEVNP4R7M16
C 1521		CKSRYB104K16
C 1522		CCSRCH331J50
C 1523		CCSRCH331J50
C 1524		CCSRCH221J50
C 1525		CCSRCH221J50
C 1526		CCSRCH221J50
C 1527		CCSRCH221J50
C 1531		CKSQYB334K16
C 1532		CKSYB475K10
C 1601		CKSRYB473K25
C 1602		CKSRYB473K25
C 1603		CKSRYB473K25
C 1701		CKSSYB104K10
C 1702		CKSSYB104K10
C 1703		CSZSR100M16
C 1704		CKSSYB104K10
C 1705		CSZSR100M16
C 1709		CKSSYB104K10
C 1710		CKSSYB104K10
C 1711		CKSSYB104K10
C 1712		CKSSYB104K10
C 1713		CKSSYB104K10
C 2000		CKSRYB104K16
C 20001		CKSRYB104K16

=====Circuit Symbol and No.	===Part Name	Part No.
A Unit Number : Unit Name : PCB Unit(A)		
D 851	LED	CN504-2
S 851	Switch(DSP)	CSN1051
S 852	Switch(TRP)	CSN1052
B Unit Number : Unit Name : PCB Unit(B)		
S 301	Switch(MAG)	CSN1044
VR 301	Volume 10kΩ	CCW1021
VR 302	Semi-fixed 1kΩ(B)	CCP1338
R 301		RS1/16S562J
R 302		RS1/16S622J
C 301		CKSRYB104K16
C 302		CKSRYB103K50
C Unit Number : Unit Name : PCB(A)		
Q 851	Photo Transistor	PT4800
D Unit Number : Unit Name : PCB(B)		
M 2	Motor Unit(-A)(TRAY)	CXB3932
F Unit Number : CWM7397 Unit Name : Extension Unit		
MISCELLANEOUS		
IC 3101	IC	NJM2068MD
IC 3102	IC	NJM2068MD
IC 3131	IC	TC74HC4066AF
IC 3301	IC	NJM2235V
IC 3311	IC	NJM2267V
IC 3601	IC	PE5058A
IC 3631	IC	HA12187FP
IC 3811	IC	PAJ002A
IC 3821	IC	BA00AST
IC 3831	IC	BA08SFP
IC 3851	IC	BA9706K
IC 3871	IC	PQ20VZ11
IC 3891	IC	PQ20VZ11
Q 3131	Transistor	UMD12N
Q 3151	Transistor	DTC323TU
Q 3152	Transistor	DTC323TU
Q 3153	Transistor	UMA2N
Q 3154	Transistor	DTA114EU
Q 3155	Transistor	DTA114EU
Q 3201	Transistor	2SC2712
Q 3301	Transistor	DTC144EU
Q 3601	Transistor	DTA144EK
Q 3811	Transistor	2SB942A
Q 3812	Transistor	DTC143TU
Q 3813	Transistor	DTC143EU
Q 3814	Transistor	DTC143TU
Q 3821	Transistor	DTC114EU
Q 3851	Transistor	2SA1731
Q 3852	Transistor	2SA1731
Q 3853	Transistor	DTC114EU
Q 3880	Transistor	2SA1162
Q 3891	Transistor	DTC114EU
Q 3931	Transistor	DTA143XU
D 3131	Diode	MA113
D 3141	Diode	RD24M(B2)

=====Circuit Symbol and No.		===Part Name	Part No.
D	3142	Diode	RD24M(B2)
D	3143	Diode	RD24M(B2)
D	3144	Diode	RD24M(B2)
D	3201	Diode	RD24M(B2)
D	3321	Diode	UDZ18(B)
D	3322	Diode	UDZ18(B)
D	3323	Diode	UDZ18(B)
D	3324	Diode	UDZ18(B)
D	3631	Diode	UDZ18(B)
D	3632	Diode	UDZ18(B)
D	3801	Diode	UDZ18(B)
D	3821	Diode	MA132WK
D	3831	Diode	HZU4R3(B3)
D	3851	Diode	RB051L-40
D	3852	Diode	RB051L-40
D	3880	Diode	MA147
D	3931	Diode	MA110
L	3101	Inductor	CTF1473
L	3102	Inductor	CTF1473
L	3301	Inductor	CTF1473
L	3801	Inductor	CTF1473
L	3851	Coil	CTH1238
L	3853	Coil	CTH1238
TH	3601	Thermistor	CCX1055
X	3601	Ceramic Resonator 6.290MHz	CSS1305
EF	3301	EMI Filter	CCG1076
EF	3302	EMI Filter	CCG1076
EF	3801	EMI Filter	CCG1051
EF	3802	EMI Filter	CCG1051
EF	3831	EMI Filter	CCG1051
EF	3851	EMI Filter	CCG1051
FU	3803	Fuse 1.5A	ICPS1R2
FU	3804	Fuse 1.5A	ICPS1R2

RESISTORS

R	3101		RS1/16S472J
R	3102		RS1/16S472J
R	3105		RS1/16S103J
R	3106		RS1/16S103J
R	3107		RS1/16S163J
R	3108		RS1/16S163J
R	3109		RS1/16S103J
R	3110		RS1/16S103J
R	3111		RS1/16S103J
R	3112		RS1/16S103J
R	3113		RS1/16S750J
R	3114		RS1/16S750J
R	3115		RS1/16S750J
R	3116		RS1/16S750J
R	3120		RS1/16S0R0J
R	3121		RS1/16S0R0J
R	3122		RS1/16S0R0J
R	3125		RS1/16S100J
R	3126		RS1/16S100J
R	3127		RS1/16S100J
R	3128		RS1/16S100J
R	3131		RS1/16S102J
R	3132		RS1/16S103J
R	3141		RS1/8S510J
R	3142		RS1/8S510J
R	3143		RS1/8S510J
R	3144		RS1/8S510J
R	3151		RS1/16S223J
R	3152		RS1/16S223J
R	3154		RS1/16S102J
R	3155		RS1/16S102J
R	3201		RS1/4S221J
R	3202		RS1/16S103J
R	3203		RS1/16S103J
R	3301		RS1/16S223J
R	3302		RS1/16S104J
R	3312		RS1/16S101J
R	3321		RS1/10S750J
R	3322		RS1/10S750J
R	3323		RS1/16S105J
R	3324		RS1/16S105J
R	3325		RS1/16S105J
R	3326		RS1/16S221J
R	3327		RS1/16S105J
R	3602		RS1/16S683J
R	3603		RS1/16S104J
R	3605		RS1/16S104J
R	3607		RS1/16S104J
R	3611		RS1/16S104J
R	3612		RS1/16S104J
R	3613		RS1/16S104J
R	3614		RS1/16S104J
R	3615		RS1/16S104J
R	3616		RS1/16S104J
R	3618		RS1/16S104J
R	3619		RS1/16S333J
R	3620		RS1/16S104J
R	3621		RS1/16S102J
R	3625		RS1/16S104J
R	3626		RS1/16S104J
R	3627		RS1/16S393J
R	3628		RS1/16S333J
R	3629		RS1/16S104J
R	3630		RS1/16S104J
R	3631		RS1/4S101J
R	3632		RS1/4S101J
R	3634		RS1/16S104J
R	3640		RS1/10S0R0J
R	3646		RS1/16S102J
R	3653		RS1/16S331J
R	3656		RS1/16S102J
R	3657		RS1/16S102J
R	3658		RS1/16S0R0J
R	3660		RS1/16S102J
R	3661		RS1/16S102J
R	3662		RS1/16S102J
R	3801		RS1/16S184J
R	3802		RN1/16SE7502D
R	3803		RN1/16SE2203D
R	3804		RN1/16SE1103D
R	3805		RN1/16SE2203D
R	3806		RN1/16SE1103D
R	3807		RS1/4S152J
R	3808		RS1/4S472J
R	3809		RS1/16S0R0J
R	3810		RS1/16S0R0J
R	3811		RS1/4S2R7J
R	3812		RS1/16S102J
R	3813		RS1/16S104J
R	3814		RS1/16S104J
R	3815		RS1/16S133J
R	3816		RS1/16S133J
R	3817		RS1/16S334J
R	3818		RS1/16S102J
R	3819		RS1/16S102J
R	3821		RS1/16S104J
R	3822		RN1/16SE1002D
R	3823		RN1/16SE1601D
R	3824		RN1/16SE1001D
R	3831		RS1/16S271J

Circuit Symbol and No.	Part Name	Part No.
R 3833		RS1/16S104J
R 3851		RS1/16S220J
R 3852		RS1/16S560J
R 3853		RN1/16SE2702D
R 3854		RS1/16S151J
R 3855		RN1/16SE4702D
R 3856		RN1/16SE1602D
R 3857		RS1/16S102J
R 3858		RN1/16SE1502D
R 3859		RS1/16S273J
R 3860		RS1/16S473J
R 3861		RS1/16S151J
R 3862		RS1/16S273J
R 3863		RS1/16S473J
R 3864		RS1/16S751J
R 3865		RS1/16S512J
R 3866		RS1/16S101J
R 3867		RS1/16S104J
R 3868		RS1/16S202J
R 3869		RS1/16S473J
R 3870		RS1/16S132J
R 3871		RS1/16S272J
R 3872		RS1/16S182J
R 3873		RS1/16S272J
R 3874		RN1/16SE1301D
R 3875		RN1/16SE1201D
R 3876		RS1/16S0R0J
R 3880		RS1/16S133J
R 3891		RN1/16SE7501D
R 3892		RN1/16SE1001D
R 3893		RS1/16S391J
R 3894		RS1/16S104J
R 3931		RN1/16SE4700D
R 3964		RS1/16S0R0J
R 3965		RS1/16S221J
R 3966		RS1/16S221J
R 3967		RS1/16S221J
R 3968		RS1/16S221J
R 3969		RS1/16S221J

CAPACITORS

Circuit Symbol and No.	Part Name	Part No.
C 3101		CEV4R7M35
C 3102		CEV4R7M35
C 3107		CEV4R7M35
C 3108		CEV4R7M35
C 3109		CCSRCH560J50
C 3110		CCSRCH560J50
C 3111		CKSRYB473K16
C 3112		CKSRYB473K16
C 3113		CCSRCH560J50
C 3114		CCSRCH560J50
C 3115		CCSRCH102J25
C 3116		CCSRCH102J25
C 3117		CCSRCH102J25
C 3118		CCSRCH102J25
C 3125		CCSRCH471J50
C 3126		CCSRCH471J50
C 3127		CCSRCH471J50
C 3128		CCSRCH471J50
C 3131		CKSRYB224K16
C 3141		CEVNP4R7M16
C 3142		CEVNP4R7M16
C 3143		CEVNP4R7M16
C 3144		CEVNP4R7M16
C 3201		CKSRYB102K50
C 3301		CEV4R7M35
C 3302		CKSRYB104K16
C 3303		CKSRYB102K50
C 3304		CEV101M10
C 3305		CEV4R7M35
C 3306		CCSRCH470J50
C 3307		CSZSR1R0M35
C 3308		CCSRCH470J50
C 3309		CCSRCH470J50
C 3310		CCSRCH470J50
C 3311		CEVNP4R7M16
C 3312		CKSRYB102K50
C 3313		CEV101M10
C 3314		CKSYB475K10
C 3315		CEV220M16
C 3316		CEV101M10
C 3317		CEV101M10
C 3601		CKSRYB104K16
C 3602		CKSRYB104K16
C 3603		CKSRYB103K50
C 3604		CKSRYB104K16
C 3606		CKSRYB104K16
C 3631		CCSRCH201J50
C 3632		CCSRCH201J50
C 3633		CKSRYB104K16
C 3801		CEV1R0M50
C 3811		CEV100M16
C 3812		CKSRYB103K50
C 3813		CKSRYB103K50
C 3814		CEHV101M6R3
C 3821		CEHV100M16
C 3822		CKSQYB334K16
C 3823		CEHV470M16
C 3824		CKSQYB334K16
C 3831		CKSRYB473K16
C 3832		CEHV101M6R3
C 3833		CEHV100M16
C 3834		CEHV470M16
C 3835		CKSQYB334K16
C 3851	47µF/6.3V	CCH1372
C 3852	10µF/16V	CCG1138
C 3853	22µF/10V	CCG1139
C 3854	22µF/10V	CCG1139
C 3855	10µF/16V	CCG1138
C 3856		CKSRYB102K50
C 3857		CKSRYB102K50
C 3858		CKSRYB683K16
C 3859		CKSRYB822K50
C 3860		CKSRYB822K50
C 3861		CKSRYB473K16
C 3862		CKSRYB473K25
C 3863		CKSYB106K6R3
C 3864		CKSRYB104K16
C 3865		CCSRCH151J50
C 3866		CKSRYB473K25
C 3867		CKSRYB473K25
C 3868		CEHV100M16
C 3869		CKSRYB105K6R3
C 3870		CKSRYB473K25
C 3871		CKSYB105K16
C 3872	100µF/4V	CCH1400
C 3873		CKSRYB473K16
C 3874		CKSRYB473K25
C 3891		CEHV100M16
C 3892		CKSRYB473K25
C 3893	22µF/12V	CCH1359
C 3894		CKSRYB473K16

=====Circuit Symbol and No.		===Part Name	Part No.

H Unit Number :
Unit Name : MF Unit

MISCELLANEOUS

D	2901	Diode	5KP24A
D	2902	Diode	GP30ML-6373
D	2903	Diode	ERA15-02VH
L	2901	Coil	CTH1113

CAPACITORS

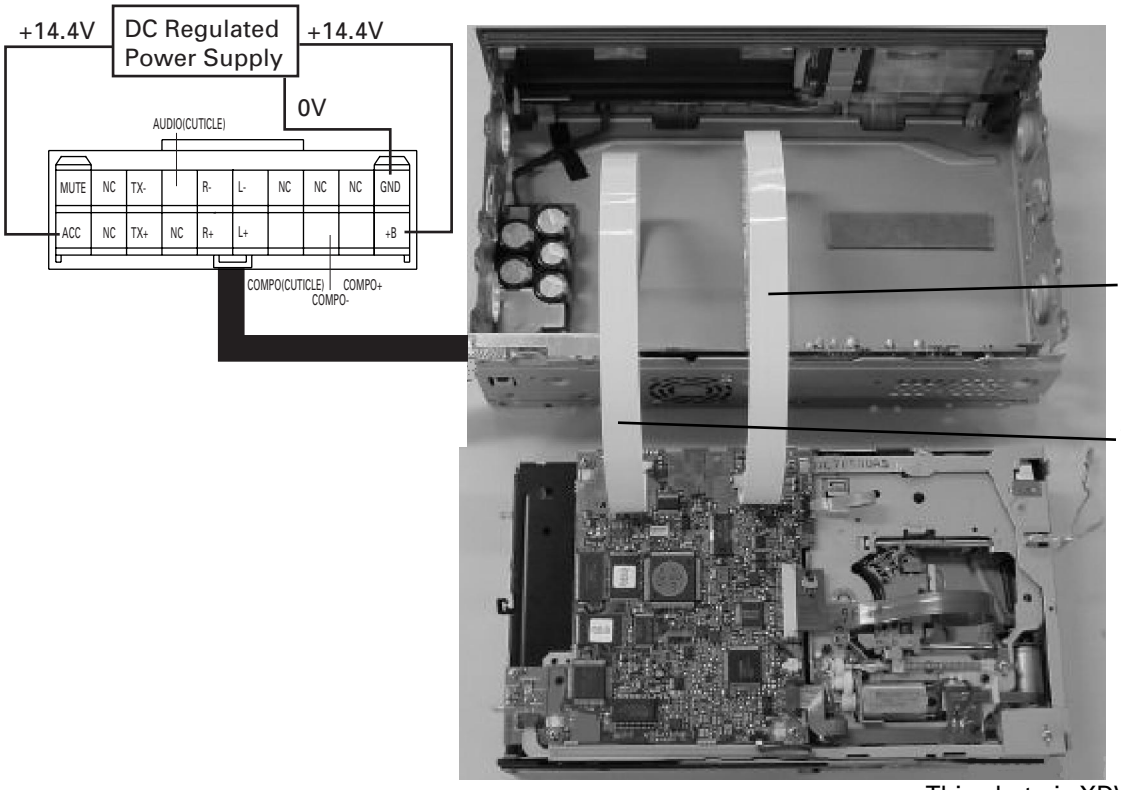
C	2901	2200µF/16V	CCH1383
C	2902	2200µF/16V	CCH1383
C	2903	3300µF/16V	CCH1384
C	2904	3300µF/16V	CCH1384
C	2905	3300µF/16V	CCH1384

Miscellaneous Pats List

		PU Unit	CGY2020
M	1	Motor Unit(-B)(CARRIAGE)	CXB3930
M	3	Motor(SPINDLE)	CXM1178
M	4	Motor Unit(-C)(ELV)	CXB3931

6. ADJUSTMENT

6.1 JIGS

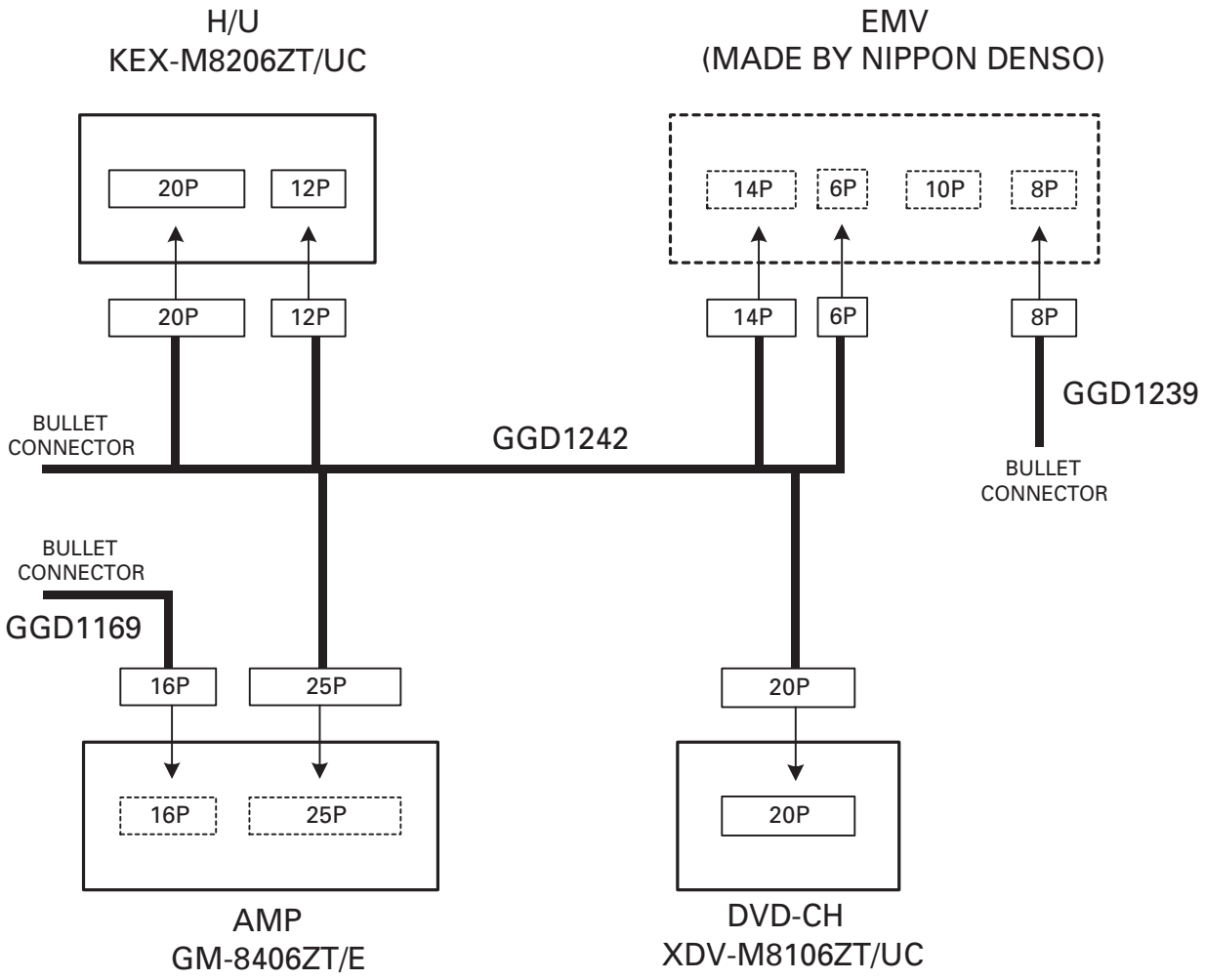


This photo is XDV-M8006ZT.

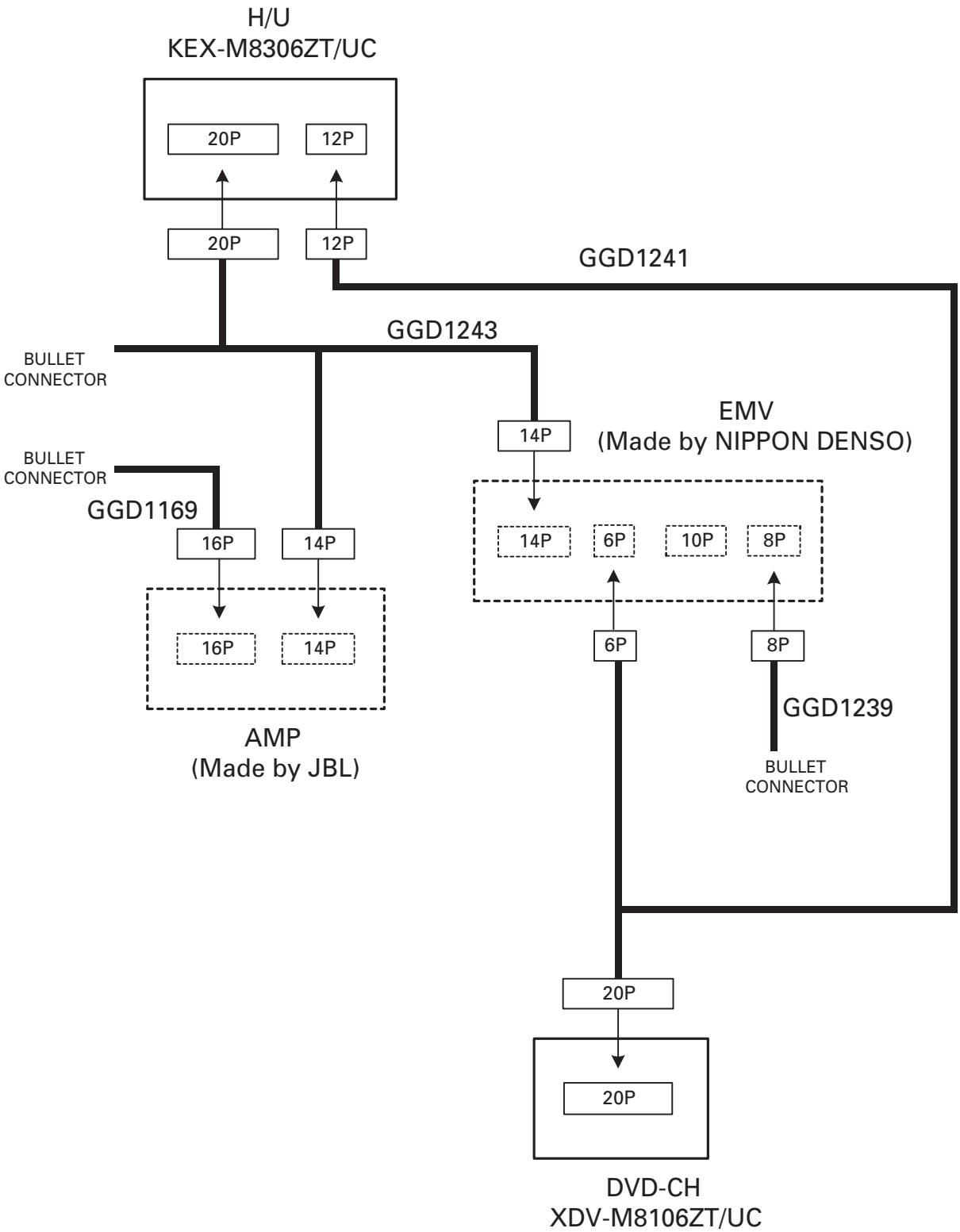
On your service benches, the mechanism should be placed with the magazine-slot side up unlike that shown in the photo.

Head Unit of TOYOTA
FX-MG8606ZT/UC,FX-MG8706ZT/UC

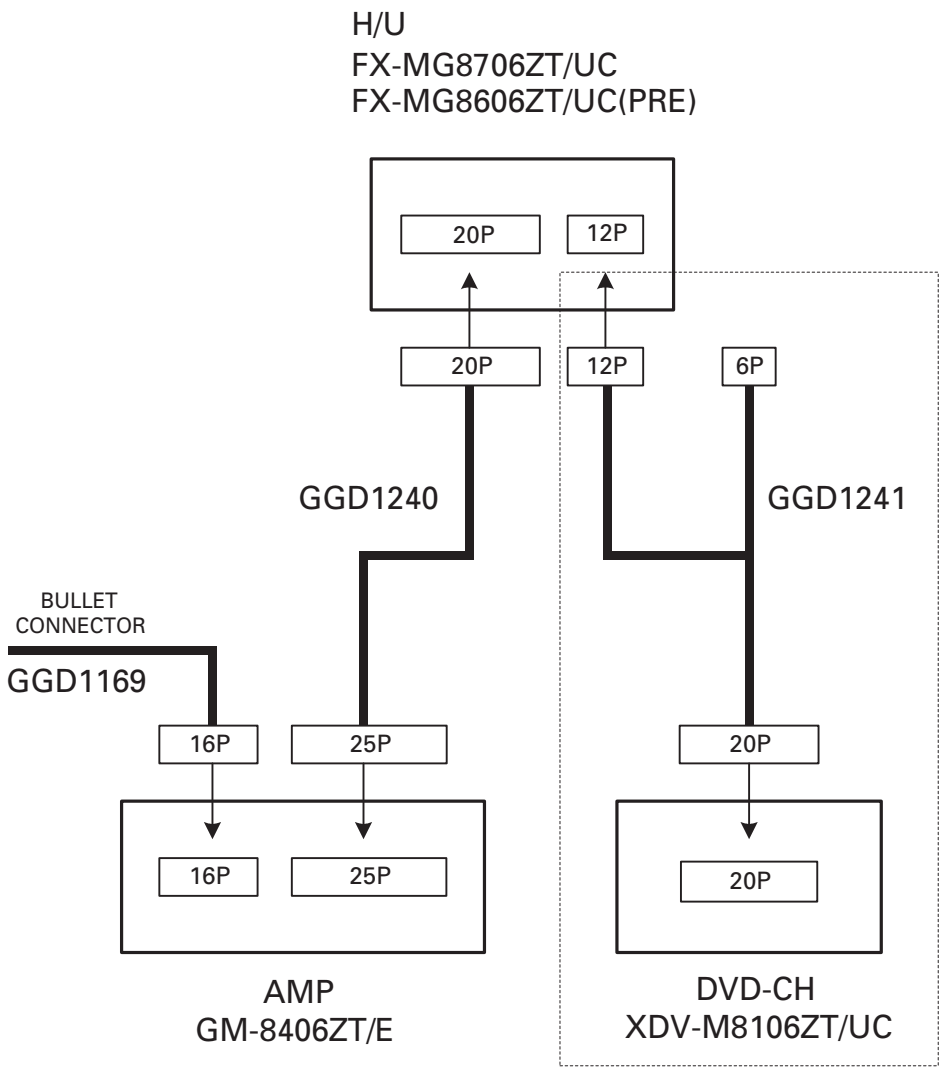
● **EMV model**


H/U
KEX-M8206ZT/UC
EMV
(MADE BY NIPPON DENSO)
20P
12P
14P
6P
10P
8P
20P
12P
14P
6P
8P
GGD1239
BULLET
CONNECTOR
GGD1242
BULLET
CONNECTOR
BULLET
CONNECTOR
GGD1169
16P
25P
20P
16P
25P
20P
AMP
GM-8406ZT/E
DVD-CH
XDV-M8106ZT/UC

● **EMV(JBL) model**



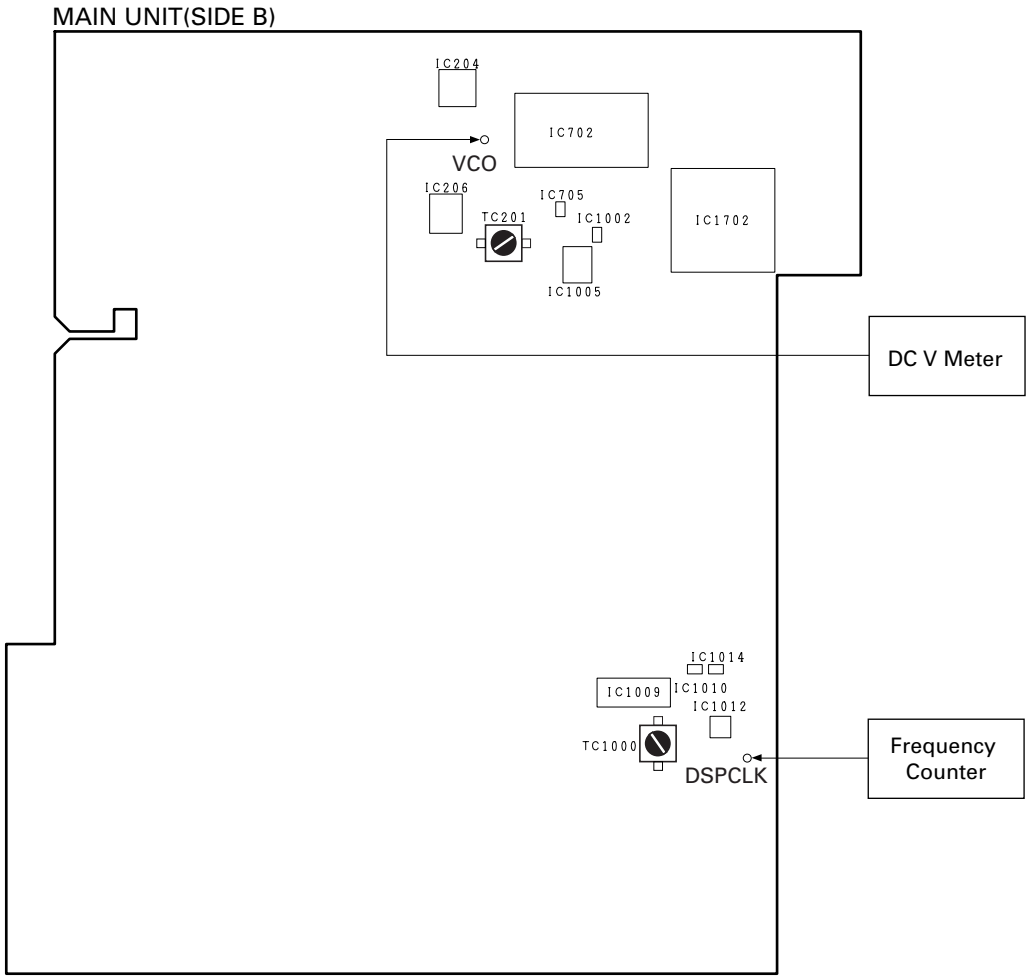
● **No EMV model**



When XDV-M8106ZT/UC
is repaired.

6.2 MAIN UNIT ADJUSTMENT

● **Connection Diagram**



Setting state : Normal Mode, Without magazine

Item	Adjustment point	Adjustment Method	Symptoms at incomplete adjustment
16MHz Master Clock	TC1000	Frequency Counter :16.934400MHz ± 80Hz	An image turns from a colored one to a monochromatic one.
VCO Offset	TC201	DC V Meter : 1.4V ± 0.2V	Too much misalignment will result in no playback.

6.3 SKEW ADJUSTMENT

● If skew adjustment is necessary:

1) Replace the pickup unit by a new one.
2) Replace the spindle motor by a new one.
3) Replace the CRG chassis by a new one.
4) Replace the main shaft of the pickup unit by a new one.
5) Replace the sub shaft of the pickup unit by a new one.

* No skew adjustment is necessary for replacement of the CRG motor and the like.

● Procedures (Fig.1)

1) Remove the adhesive of the pickup unit with a pair of tweezers (above 2) to 5) only).

* Take care at this time that no fragments of the adhesive will be scattered, and that no unnatural force will apply to the actuator.

2) Monitor the test point of the TP210 (RF waveform monitor) on the basis of GND in the product state with an oscilloscope.
3) Clamp adjusting disc (GGV1018).

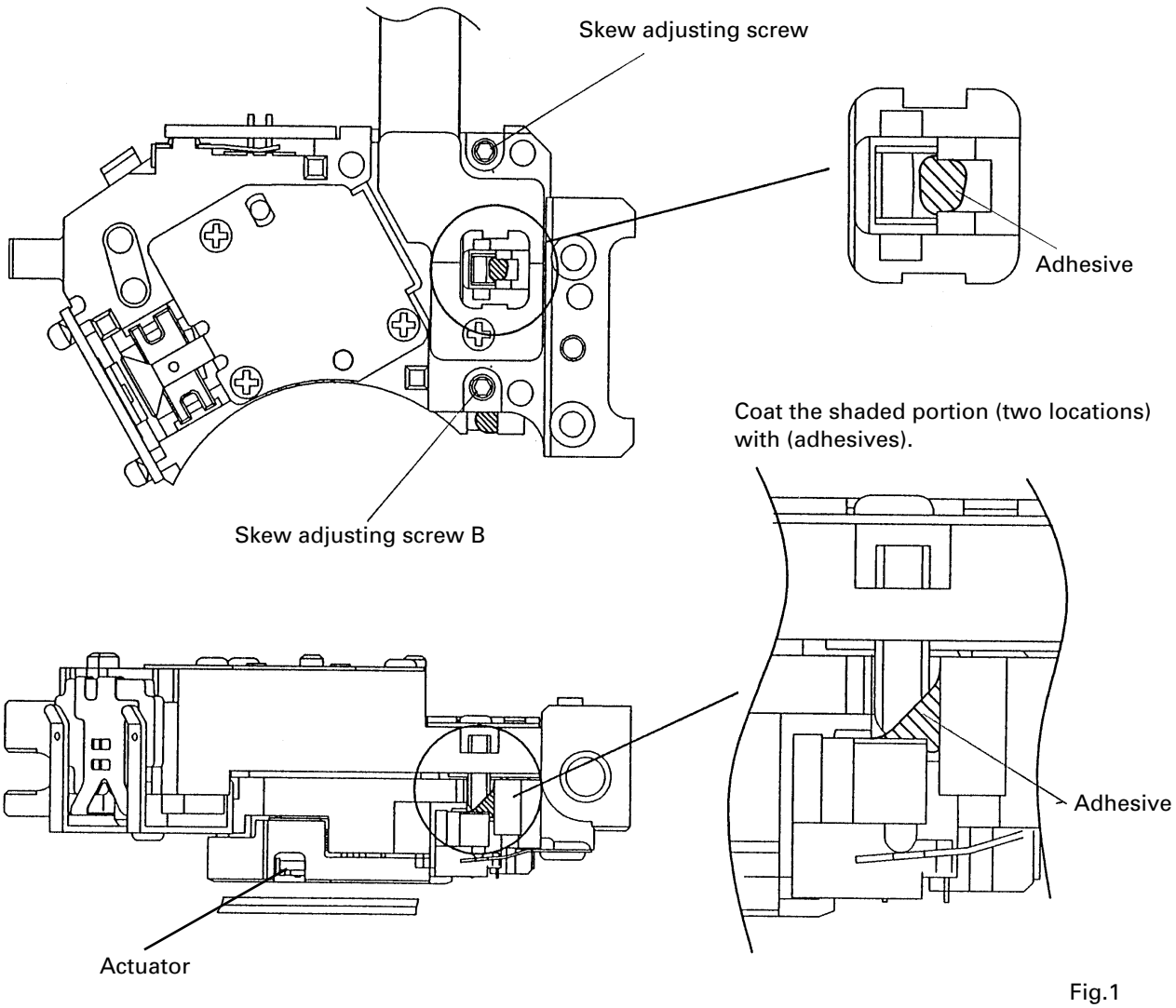


Fig.1

4) Turn on the power in the test mode (F. Offset adjustment is found) and move the pickup to the vicinity of the center of the disc.
5) Turn on the DVD LD and perform Focus Close.
6) Automatically adjust Tracking Balance and perform Tracking Close.
7) Observing RF waveform levels of an oscilloscope, slightly turn skew adjusting screw A and adjust the oscilloscope so that the levels can be maximized. Repeat this operation three times and fix the levels where they are maximized.
8) Mix agents A and B of adhesive 601 at a ratio of 1 to 1 and coat a specified part with both agents of the adhesive. The adhesive is cured about 15 minutes. The coating position is shown in Fig.1.

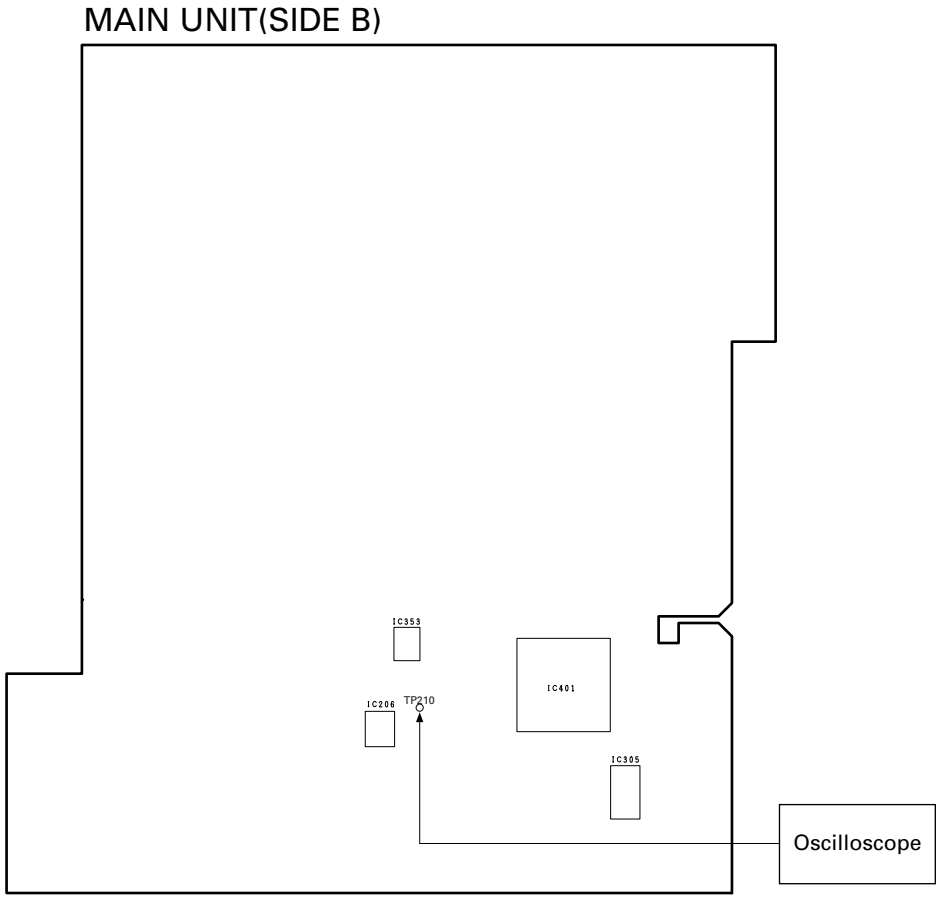
Note) Do not apply the adhesive to the pickup section and the mechanical unit section other than the specified part. Because heat is generated, do not mix a great number of adhesives at a time. Use the same number of adhesives as the original one. Do not apply vibration until the adhesive is fixed.

9) Apply the screw lock to the head of the skew screw and secure it.

● Symptoms at incomplete adjustment

1) Deterioration of error rates
2) Large RF jitters: Waveforms are distorted.
3) Unstable tracking servo: There are such effects as leading-in and unstable servo.

● Connection Diagram



6.4 ELEVATION ADJUSTMENT

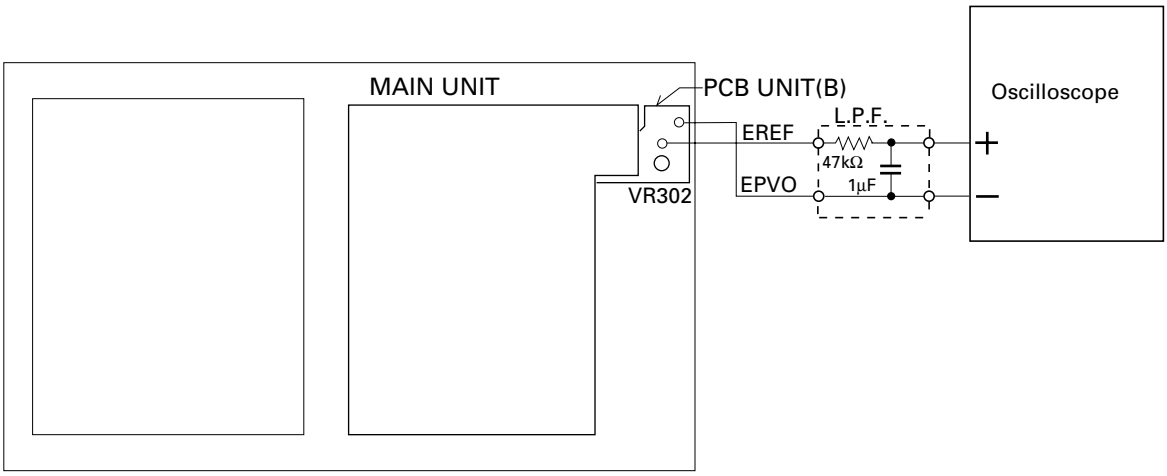
● **This adjustment shall be performed when an error code 84 is displayed for an elevation error.**

• Precautions
This mechanism unit uses a slide variable resistor to detect the height of the stage.
To absorb misalignment of the stage height due to unevenness of the DVD/CD mechanism unit and main unit, the adjustment for each mechanism unit needs to be performed using semi-fixed resistors.
Because adjustment is performed on the production line, readjustment is not necessary usually. However, if an elevation error occurs or when the slide variable resistor, spindle motor and CRG chassis are replaced, elevation needs to be adjusted in the following procedures:

• **Purpose**
Adjust and check that the operation of elevation is normal.

• **Adjustment method**

• Measuring apparatus	Oscilloscope, L.P.F. (one piece)
• Measuring point	EREF or EPVO
• Setting state	Without magazine, test mode Place the DVD/CD mechanism unit facedown (place the DVD/CD mechanism unit so that the main unit may be set to the upper side).



• **Check procedures**

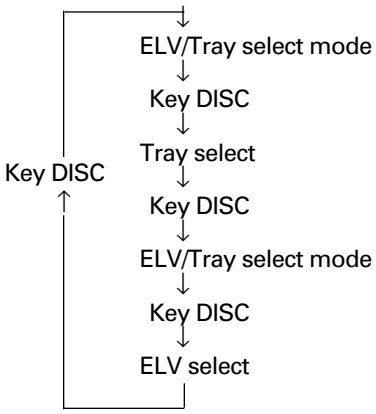
For the flowchart of the test mode, refer to Page 70.

1. Enter the test mode and select a multiple DVD/CD player.
2. Set the mechanism unit test mode.

Display on head unit

00800000
20400000

3. Move to the ELV/tray selection mode and press DISC key to select the ELV mode.

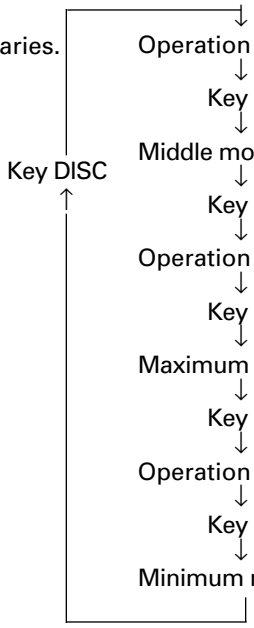


Display on head unit

	7 0 4 1 0 0 0 0
Tray	0 0 0 0 0 0 0 1
	7 0 4 1 0 0 0 0
ELV	0 0 0 0 0 0 0 0

4. Move to the operation mode selection.

5. When the DISC key is pressed, travel varies.
Note: If travel is set to Major, the stage mechanical unit continues moving as long as the DISC key is pressed.
If travel is set to Intermediate and Minor, the stage mechanical unit moves whenever the DISC key is pressed once.



	7 0 4 2 0 0 0 0
	0 0 0 0 0 0 0 1
	7 0 4 2 0 0 0 0
	0 0 0 0 0 0 0 2
	7 0 4 2 0 0 0 0
	0 0 0 0 0 0 0 0

6. Move to the motor forward revolution mode or motor reverse revolution mode and align the magazine slot to graduations on the fourth disc (Fig. 2).

Forward revolution	7 0 4 3 0 0 0 0
Reverse revolution	7 0 4 4 0 0 0 0

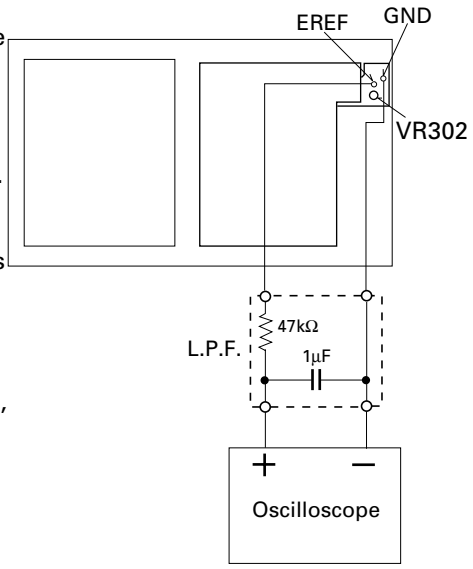
7. Adjustment
Adjust the potential difference between EREF and EPVO of PCB (B) to 380 ± 20 mV with VR302.

7 0 4 5 0 0 0 0

8. Termination of adjustment
Move to the mechanism-unit test termination mode and terminate the mechanism-unit test mode.

9. Operation check
   Terminate the test mode.
   Place the mechanism unit horizontally (set the main unit to the drop side). At this time, take care of short-circuiting of the PCB.

10. Check the height of the stage.
    Press the DISC ± key to select DISC 4.
    Check that the stopper bend of the clamping lever is fitted in the groove of the frame stopper section. (Fig. 3 to 5)



• Precautions
• The stopper bend to be clamped finally is clamped under the groove. Check the stopper bend at the position where it is fitted in the groove.
• Adjustment is completed if the stopper bend enters the center and is clamped under the groove. Go to 14).
• If the stopper bend is dislocated, check misalignment. Go to 11).

11. If the mechanism unit is dislocated:
    Place the mechanism unit facedown.
    When the mechanism unit is dislocated to the direction of the first disc, turn VR302 counterclockwise. (Fig. 3)

    Drop the voltage of EREF by 20 mV which was adjusted in 7.
    to descend the stage to the direction of the sixth disc by 0.1 mm.

    When the mechanism unit is dislocated to the direction of the sixth disc, turn VR302 clockwise. (Fig. 5)

    Raise the voltage of EREF by 20 mV which was adjusted in 7.
    to ascend the stage to the direction of the first disc by 0.1 mm.

12. Place the mechanism unit horizontally and recheck from 10.

13. After adjustment has been completed,

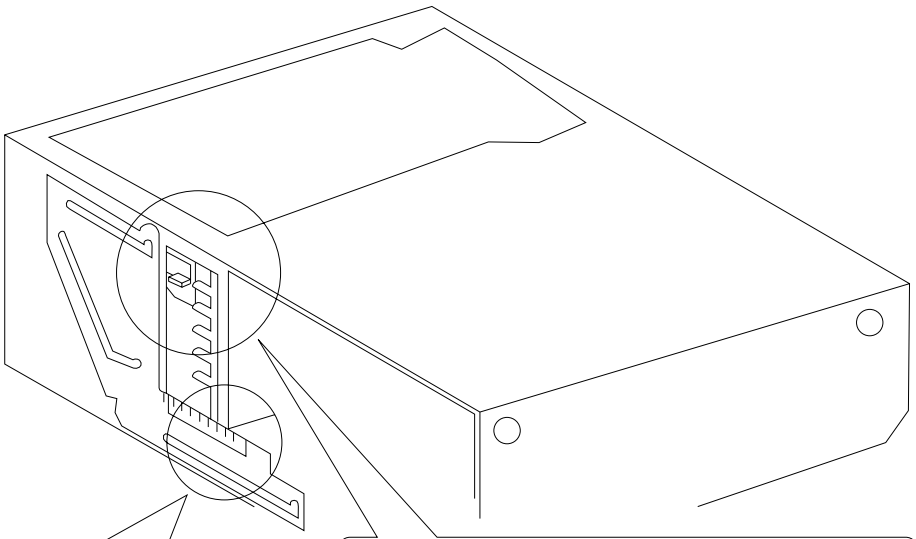
14. Press the EJECT switch.

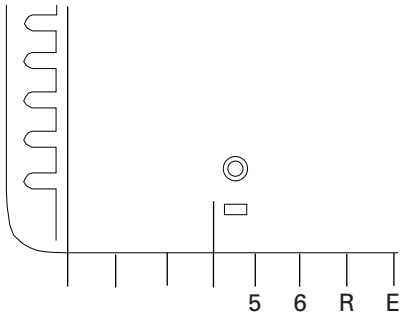
15. After the operation of the mechanism unit has stopped, turn off the power.

16. After the power has be turned off, turn on the power in one minute or more and insert the magazine.

17. Check that the mechanism unit operates normally for the first and fourth discs.

18. Terminate all adjustment for OK (normal operation) and readjust for NG (abnormal operation).



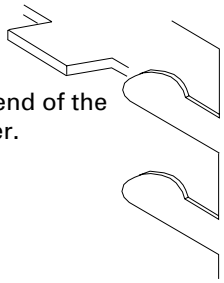


Adjust the insertion gate of magazine to the fourth scale.

Fig. 2

Stopper bend of the clamp lever.

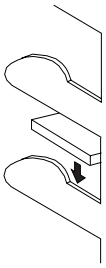
NG



Dislocated toward the first DVD.

Fig. 3

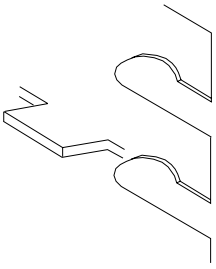
OK



Engaged in the center and pressed downward.

Fig. 4

NG



Dislocated toward the sixth DVD.

Fig. 5

7. GENERAL INFORMATION

7.1 DIAGNOSIS

7.1.1 TEST MODE

1) Precautions on Adjustment

- Because this equipment uses a single voltage (+5 V) in the regulator, the reference voltage of a signal is not GND, but is REFO (VR21, VR25, PREF). If REFO and GND are mixed and touched at product adjustment, correct potential cannot be measured but also the servo malfunctions and an strong shock applies to the pickup. So, note the following items. REFO and GND must not be mixed on the negative side of the probe of the measuring apparatus. In particular, do not connect the negative side of the ch1 probe of the oscilloscope to REFO and the negative side of the ch2 probe to GND. Further, in general, because most main units of measuring apparatuses reach the same potential as the negative side of the probe, make the main unit of the measuring apparatus enter the floating state. If REFO and GND are incorrectly connected, immediately turn off the power.
- Be sure to turn off the power when attaching and detaching the various filters and wire materials required for measurement.
- For the adjustment and measurement after power-on, adjust or measure after having performed running for about one minute until the circuit becomes stable.
- Because various types of protection do not operate by software in the test mode, do not apply a mechanical and electrical shock during adjustment.
- This equipment uses a photo transistor to detect a disc when inserting and removing it to and from the tray. Accordingly, if strong light enters this equipment with the case remove at repair and adjustment, the following malfunctions may occur.

  * Although there is a disc, play is disabled because the disc cannot be used.

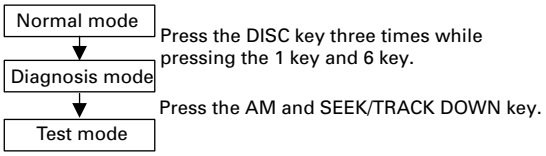
  * A disc of 12 cm is incorrectly detected for a disc of 8 cm.

  When a malfunction occurred, take action such as changing the position of the light source, changing the orientation of this equipment or covering a photo transistor.
- In the test mode, after having executed carriage movement during focus search, immediately turn off the power. (The lens is stuck up or down and the actuator may be damaged by fire.)
- During disc replacement, press the key of the disc to be replaced by a new one.

2) Test Mode

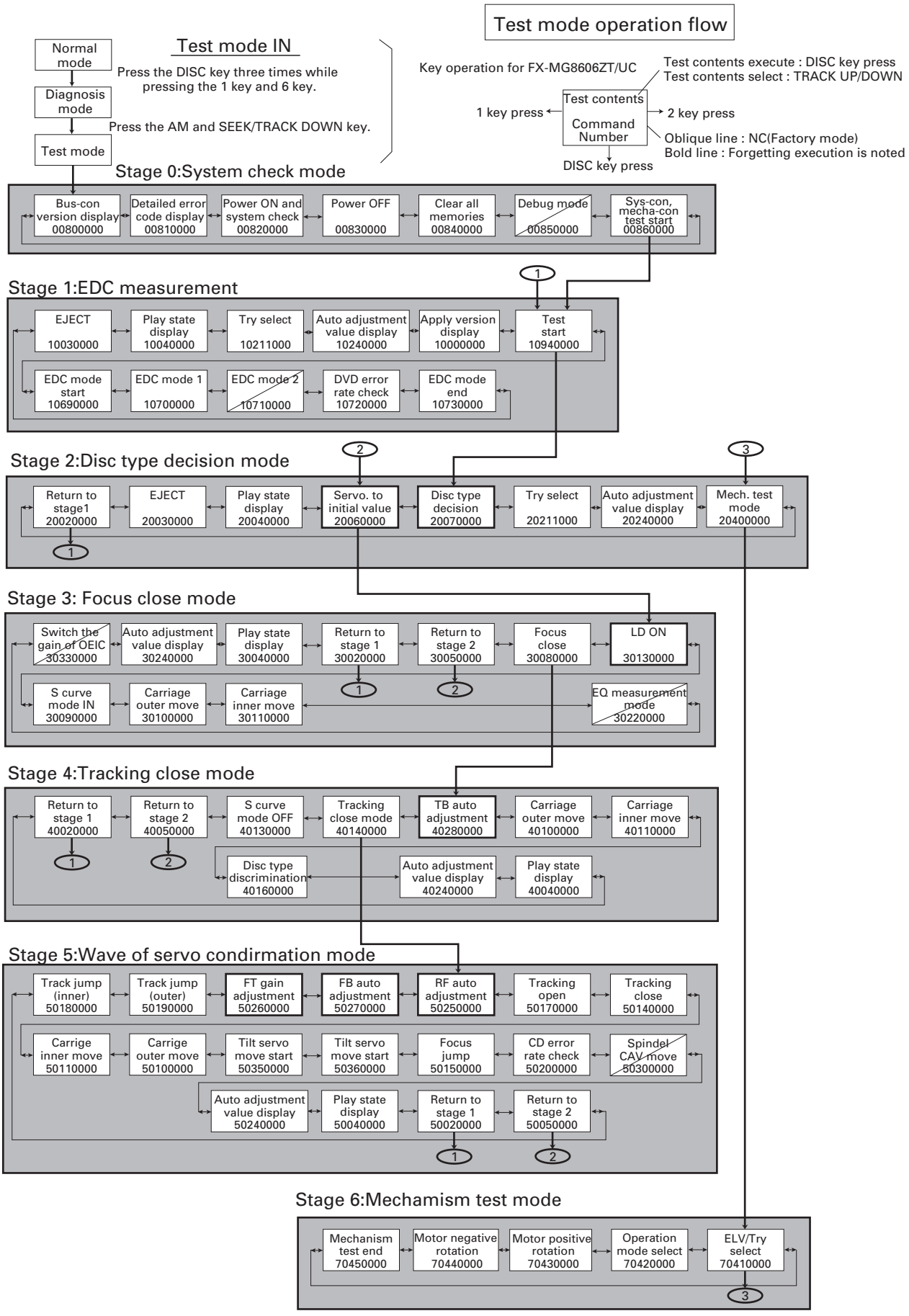
Because this machine is adjusted by combining a pet unit, each adjustment key operation is also performed by the pet unit. For reference purposes, how to enter the test mode and key operation for FX-MG8606 are described. Besides, the key in this adjustment text is also an FX-MG8606ZT/UC key.

- How to enter the test mode


Normal mode
Press the DISC key three times while pressing the 1 key and 6 key.
Diagnosis mode
Press the AM and SEEK/TRACK DOWN key.
Test mode

- How to reset the test mode

  Enter ACC and backup OFF.
- After having executed carriage movement during focus search, immediately turn off the power. (Because the lens is stuck, the actuator may be damaged by fire.)
- The TR Jump below 255 TR continues operation even if the key is detached. Other TR Jumps enter the T Close state when the key is detached.
- As soon as the power is turned on/off, the Jump Mode is reset to Single TR and the automatic adjustment value returns to the initial value.
- During disc replacement, press the key of the disc to be replaced by a new one.
- Be sure to load a DVD disc on the first tray of the magazine.


Test mode operation flow
Normal mode
Diagnosis mode
Test mode
Test mode IN
Press the DISC key three times while pressing the 1 key and 6 key.
Press the AM and SEEK/TRACK DOWN key.
Key operation for FX-MG8606ZT/UC
Test contents execute : DISC key press
Test contents select : TRACK UP/DOWN
Test contents
Command Number
1 key press
2 key press
DISC key press
Oblique line : NC(Factory mode)
Bold line : Forgetting execution is noted
Stage 0:System check mode
Bus-con version display 00800000
Detailed error code display 00810000
Power ON and system check 00820000
Power OFF 00830000
Clear all memories 00840000
Debug mode 00850000
Sys-con, mecha-con test start 00860000
Stage 1:EDC measurement
EJECT 10030000
Play state display 10040000
Try select 10211000
Auto adjustment value display 10240000
Apply version display 10000000
Test start 10940000
EDC mode start 10690000
EDC mode 1 10700000
EDC mode 2 10710000
DVD error rate check 10720000
EDC mode end 10730000
Stage 2:Disc type decision mode
Return to stage1 20020000
EJECT 20030000
Play state display 20040000
Servo. to initial value 20060000
Disc type decision 20070000
Try select 20211000
Auto adjustment value display 20240000
Mech. test mode 20400000
Stage 3: Focus close mode
Switch the gain of OEIC 30330000
Auto adjustment value display 30240000
Play state display 30040000
Return to stage 1 30020000
Return to stage 2 30050000
Focus close 30080000
LD ON 30130000
S curve mode IN 30090000
Carriage outer move 30100000
Carriage inner move 30110000
EQ measurement mode 30220000
Stage 4:Tracking close mode
Return to stage 1 40020000
Return to stage 2 40050000
S curve mode OFF 40130000
Tracking close mode 40140000
TB auto adjustment 40280000
Carriage outer move 40100000
Carriage inner move 40110000
Disc type discrimination 40160000
Auto adjustment value display 40240000
Play state display 40040000
Stage 5:Wave of servo condirmation mode
Track jump (inner) 50180000
Track jump (outer) 50190000
FT gain adjustment 50260000
FB auto adjustment 50270000
RF auto adjustment 50250000
Tracking open 50170000
Tracking close 50140000
Carrige inner move 50110000
Carrige outer move 50100000
Tilt servo move start 50350000
Tilt servo move start 50360000
Focus jump 50150000
CD error rate check 50200000
Spindel CAV move 50300000
Auto adjustment value display 50240000
Play state display 50040000
Return to stage 1 50020000
Return to stage 2 50050000
Stage 6:Mechamism test mode
Mechanism test end 70450000
Motor negative rotation 70440000
Motor positive rotation 70430000
Operation mode select 70420000
ELV/Try select 70410000

Test Mode IN, Stage 0

● Outline

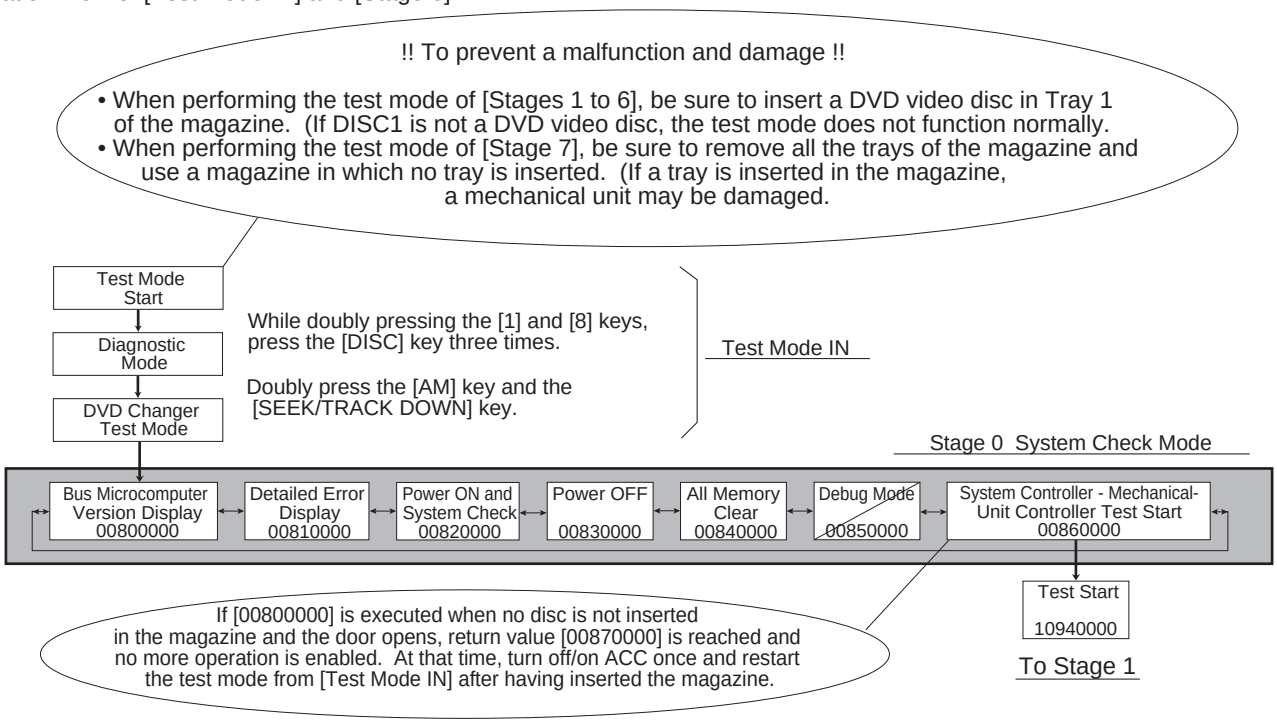
[Test Mode IN]

• [Test Mode IN] is a procedure for entering the DVD changer in the test mode.
• Once the DVD changer has exited from the test mode, restart the test mode from [Test Mode IN]

[Stage 0]

• This stage displays a version number of the bus microcomputer, checks the contents of detailed errors and performs a system check.

● Operation Flow of [Test Mode IN] and [Stage 0]


!! To prevent a malfunction and damage !!
• When performing the test mode of [Stages 1 to 6], be sure to insert a DVD video disc in Tray 1 of the magazine. (If DISC1 is not a DVD video disc, the test mode does not function normally.
• When performing the test mode of [Stage 7], be sure to remove all the trays of the magazine and use a magazine in which no tray is inserted. (If a tray is inserted in the magazine, a mechanical unit may be damaged.
Test Mode Start
Diagnostic Mode
DVD Changer Test Mode
While doubly pressing the [1] and [8] keys, press the [DISC] key three times.
Doubly press the [AM] key and the [SEEK/TRACK DOWN] key.
Test Mode IN
Stage 0 System Check Mode
Bus Microcomputer Version Display 00800000
Detailed Error Display 00810000
Power ON and System Check 00820000
Power OFF 00830000
All Memory Clear 00840000
Debug Mode 00850000
System Controller - Mechanical-Unit Controller Test Start 00860000
Test Start 10940000
To Stage 1
If [00800000] is executed when no disc is not inserted in the magazine and the door opens, return value [00870000] is reached and no more operation is enabled. At that time, turn off/on ACC once and restart the test mode from [Test Mode IN] after having inserted the magazine.

● Example of Test Execution

• Check a detailed error code.
  1) Check the contents of an error which is currently occurring. : Execute [00810000].
  2) Newly obtain error contents. : Execute [00840000], [00830000], [00820000] and [00810000] in this order.

• Go to the next stage. : Execute [00860000].

● Contents of Test

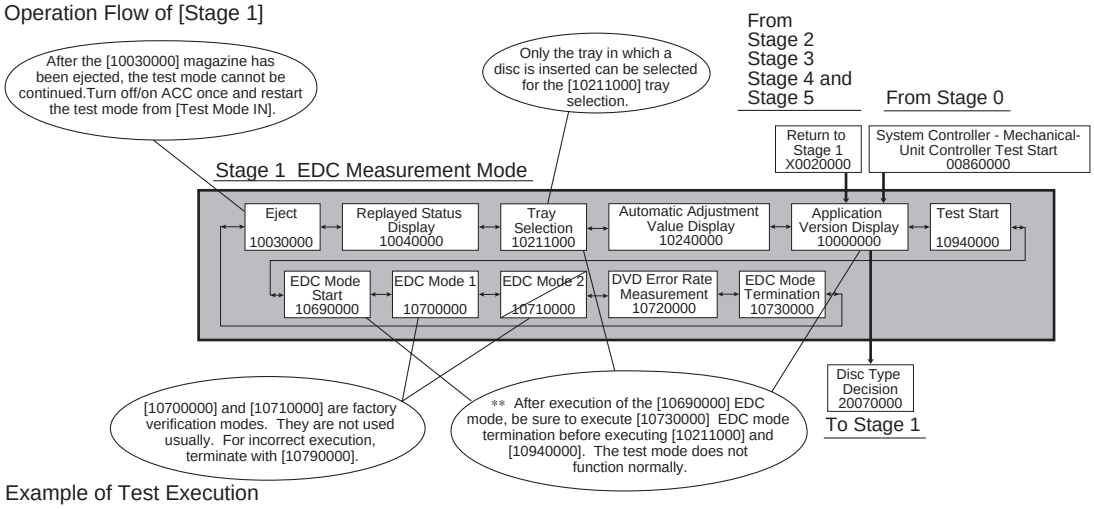
	Command number	Test name	Test contents	Test contents selection item setting	Return value
			Execute test contents: Press the DISC key. Return to the command number display: Re-press the DISC key.	Selection switching: Pressing the TRACK UP/DOWN key	
Press the 1 key →	00800000	Bus microcomputer version display	Displays a bus microcomputer version.		Version number
	00810000	Detailed error display	Displays a detailed error code.		OOO_XX (XX: error code) For error contents, refer to the error code table.
	00820000	Power ON and system check	Turns on the power.		None
	00830000	Power OFF	Turns off the power.		None
← Press the 2 key	00840000	All memory clear	Clears error histories recorded in the system microcomputer.		00800001
	00850000	Debug mode	** Factory Mode ** Displays debug.		00800001
	00860000	System controller - mechanical-unit controller test start	Moves to the test mode.		None

Stage 1

● Outline

[Stage 1] displays an application program version number and measures (DVD) an error rate.

● Operation Flow of [Stage 1]


After the [10030000] magazine has been ejected, the test mode cannot be continued.Turn off/on ACC once and restart the test mode from [Test Mode IN].
Only the tray in which a disc is inserted can be selected for the [10211000] tray selection.
From Stage 2 Stage 3 Stage 4 and Stage 5
From Stage 0
Return to Stage 1 X0020000
System Controller - Mechanical-Unit Controller Test Start 00860000
Stage 1 EDC Measurement Mode
Eject 10030000
Replayed Status Display 10040000
Tray Selection 10211000
Automatic Adjustment Value Display 10240000
Application Version Display 10000000
Test Start 10940000
EDC Mode Start 10690000
EDC Mode 1 10700000
EDC Mode 2 10710000
DVD Error Rate Measurement 10720000
EDC Mode Termination 10730000
Disc Type Decision 20070000
To Stage 1
[10700000] and [10710000] are factory verification modes. They are not used usually. For incorrect execution, terminate with [10790000].
** After execution of the [10690000] EDC mode, be sure to execute [10730000] EDC mode termination before executing [10211000] and [10940000]. The test mode does not function normally.

● Example of Test Execution

- DVD error rate measurement:
  Collectively execute [10690000], [10700000], [10720000] Measurement and [10730000] in this order (normally less than 0.1%).
  For the details of the DVD error rate measurement method, refer to the appended table.
  The CD error rate is enabled at [Stage 5].
- Display an automatic adjustment value of servo
  Execute [10690000], [10240000] Display and [10730000] in this order. Only when [10690000] is executed, a normal value is displayed.
  The initial value of automatic adjustment is displayed.
- Go to the next step: Execute [10940000].

● Contents of Test

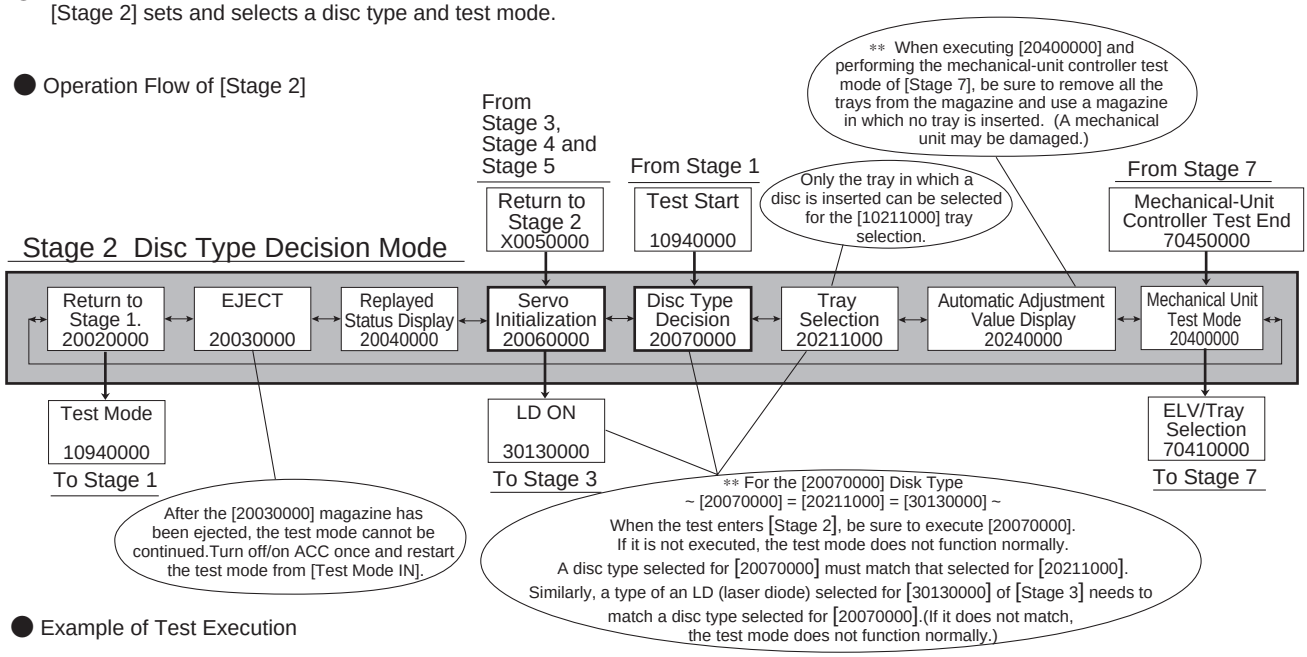
	Command number	Test name	Test contents Execute test contents: Press the DISC key. Return to command number display: Re-press the DISC key.	Test contents selection item setting Selection switching: Pressing the TRACK UP/DOWN key	Return value
Press the 1 key →	10030000	EJECT	Ejects the magazine.	Whether carriage returns the home position or not is selected at ejection. [10030000] With carriage home [10031000] Without carriage home	00000000(With carriage home) 00000001(Without carriage home)
	10040000	Replayed status display	Displays a replayed status.		00000000(at servo OFF) 01010101(Servo initialization state) 02020202(at focus servo ON) ID No. (at DVD replay) MSF No. (at CD replay)
	10211000	Tray selection	Clamps an optional disc	A tray number is selected. Executes [1021X000] "X" matching an optional tray number.	0000000X("X" is a tray number.)
	10240000	Automatic adjustment value display	Displays an automatic adjustment result of a servo system.	Toggle-selects an adjustment value to be displayed. Display at selection "0"[10240XXX] "1"[10241XXX] "2"[10242XXX]	Refer to the appended table.
	10000000	Application version display	Displays a version of an application program.		Application program version number
	10940000	Test start	Goes to Stage 2. (Starts the mechanical-unit controller/microcomputer test mode.)		00000000
← Press the 2 key	10690000	EDC mode start	Starts normal replay after control data read for DVD, and after TOC read for CD.		TOC-RDX ("X" is a tray number.)
	10700000	EDC test mode 1	Specifies a replay start position and performs solid replay.	A replay start position is set.(For DVD) ID number, and (for CD) MSF number. Sets an MSF number after having executed 10711000. Sets an ID number after having executed 10700000.	EDC10000(for DVD) EDC1XXXX(for CD) and X is a minute and second 10700000
	10710000	EDC test mode 2	** Factory Mode ** (For DVD) Starts the replay which repeats the operation of 1-block read/pause. (For CD) Starts the same operation as EDC mode 1	A replay start position is set (For DVD) ID number, and (for CD) MSF number. Sets an MSF number after having executed 10711000. Sets an ID number after having executed 10700000.	EDC10000(for DVD) EDC1XXXX(for CD) and X is a minute and second
	10720000	Error rate measurement	Measures a C1 error rate of DVD.	Selects between 1 and 64 of the number of sampling blocks. (Usually 32 blocks) ···Refer to the appended table.	A C1 error rate is exponentially displayed.
	10730000	EDC mode end	Terminates the EDC mode.		None

Stage 2

● Outline

[Stage 2] sets and selects a disc type and test mode.

● Operation Flow of [Stage 2]


** When executing [20400000] and performing the mechanical-unit controller test mode of [Stage 7], be sure to remove all the trays from the magazine and use a magazine in which no tray is inserted. (A mechanical unit may be damaged.)
From Stage 3, Stage 4 and Stage 5
From Stage 1
From Stage 7
Only the tray in which a disc is inserted can be selected for the [10211000] tray selection.
Return to Stage 2 X00050000
Test Start 10940000
Mechanical-Unit Controller Test End 70450000
Stage 2 Disc Type Decision Mode
Return to Stage 1. 20020000
EJECT 20030000
Replayed Status Display 20040000
Servo Initialization 20060000
Disc Type Decision 20070000
Tray Selection 20211000
Automatic Adjustment Value Display 20240000
Mechanical Unit Test Mode 20400000
Test Mode 10940000
To Stage 1
LD ON 30130000
To Stage 3
ELV/Tray Selection 70410000
To Stage 7
After the [20030000] magazine has been ejected, the test mode cannot be continued.Turn off/on ACC once and restart the test mode from [Test Mode IN].
** For the [20070000] Disk Type
~ [20070000] = [20211000] = [30130000] ~
When the test enters [Stage 2], be sure to execute [20070000].
If it is not executed, the test mode does not function normally.
A disc type selected for [20070000] must match that selected for [20211000].
Similarly, a type of an LD (laser diode) selected for [30130000] of [Stage 3] needs to match a disc type selected for [20070000].(If it does not match, the test mode does not function normally.)

● Example of Test Execution

- Go to [Stage 3]: Execute [20211000], [20211000] and [2006000] in this order.
- Go to [Stage 7]: Execute [20240000].
  When the mechanical unit test mode is executed, the [20070000] Execution is unnecessary because there is no disc in the magazine.

● Contents of Test

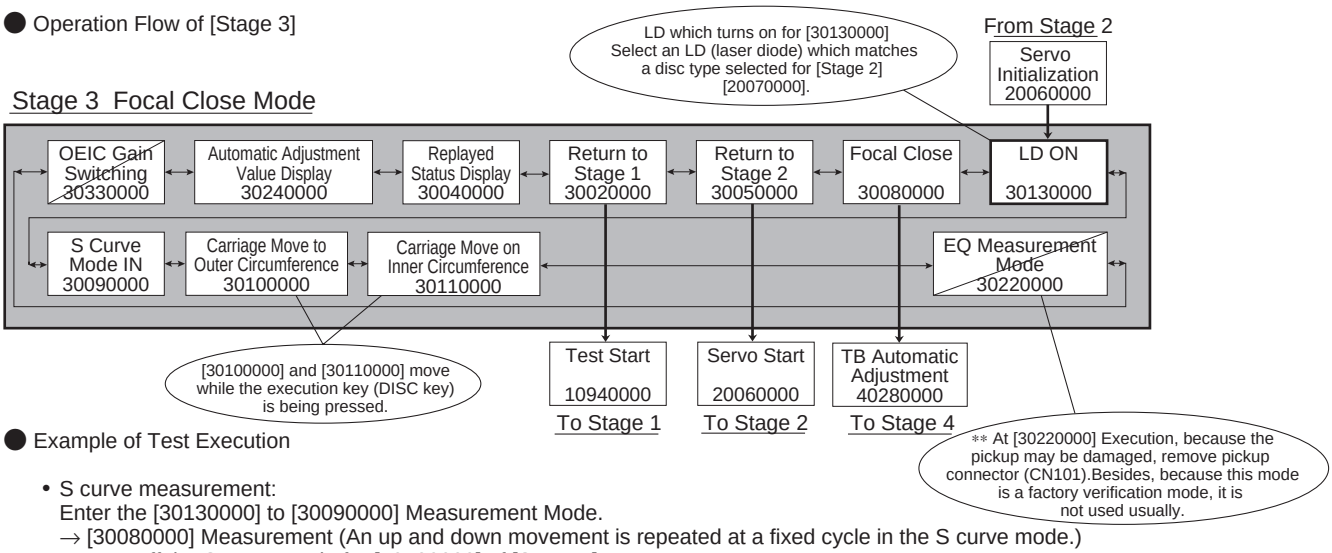
	Command number	Test name	Test contents Execute test contents: Press the DISC key. Return to command number display: Re-press the DISC key	Test contents selection item setting Selection switching: Pressing the TRACK UP/DOWN key	Return value
Press the 1 key →	20020000	Return to Stage 1	Returns to Stage 1.		00000000
	20030000	EJECT	Ejects the magazine	Whether carriage returns to the home position is selected at ejection. [2003000] With home carriage [2031000] Without carriage home	00000000 (With carriage home) 00000001 (Without carriage home)
	20040000	Replayed Status Display	Displays a replayed status.		00000000 (at servo OFF) 01010101(Servo initialization state) 02020202(at focus servo ON) ID number (at DVD replay) MSF number (at CD replay)
	20060000	Servo Initialization	Initializes a servo system.	Whether a servo system automatic adjustment is performed or not is selected at servo initialization. [20610000] With offset adjustment (Usually set to offset adjustment) [20060000] Without offset adjustment	00000000(Irrespective of a selection result)
	20070000	Disc Type Decision	Decides a disc type to set a servo gain in accordance with the disc type used for test.	A disc type is decided. [20070000] CD setting [20071000] DVD1 layer setting [20072000] DVD2 layer setting [20073000] Reserved	00000000(at CD selection) 00000001(at DVD1 layer selection) 00000002(at DVD2 layer selection) 00000003(Reserved)
← Press the 2 key	20211000	Tray Selection	Clamps an optional disc	A tray number is selected. Executes [2021X000] "X" matching an optional tray number	0000000X("X" is a tray number.)
	20240000	Automatic Adjustment Value Display	Toggle-selects an adjustment value to be displayed.	Toggle-selects an adjustment value to be displayed.Display at selection "0" [20240XXX] "1" [20241XXX] "2" [20242XXX]	Refer to the appended table.
	20400000	Mechanical-Unit Controller Test Mode	Moves to the mechanical-unit controller test mode.		00000000

Stage 3

● Outline

[Stage 3] is used for measuring a servo system. (LD ON to focal close)

● Operation Flow of [Stage 3]


Stage 3 Focal Close Mode
LD which turns on for [30130000]
Select an LD (laser diode) which matches a disc type selected for [Stage 2] [20070000].
From Stage 2
Servo Initialization 20060000
OEIC Gain Switching 30330000
Automatic Adjustment Value Display 30240000
Replayed Status Display 30040000
Return to Stage 1 30020000
Return to Stage 2 30050000
Focal Close 30080000
LD ON 30130000
S Curve Mode IN 30090000
Carriage Move to Outer Circumference 30100000
Carriage Move on Inner Circumference 30110000
EQ Measurement Mode 30220000
[30100000] and [30110000] move while the execution key (DISC key) is being pressed.
Test Start 10940000
To Stage 1
Servo Start 20060000
To Stage 2
TB Automatic Adjustment 40280000
To Stage 4
** At [30220000] Execution, because the pickup may be damaged, remove pickup connector (CN101).Besides, because this mode is a factory verification mode, it is not used usually.

● Example of Test Execution

- S curve measurement:
  Enter the [30130000] to [30090000] Measurement Mode.
  → [30080000] Measurement (An up and down movement is repeated at a fixed cycle in the S curve mode.)
  → Turn off the S curve mode for [40130000] of [Stage 4].
- Focus servo system measurement/Go to the next stage: Execute [30130000] and [300080000] in this order.

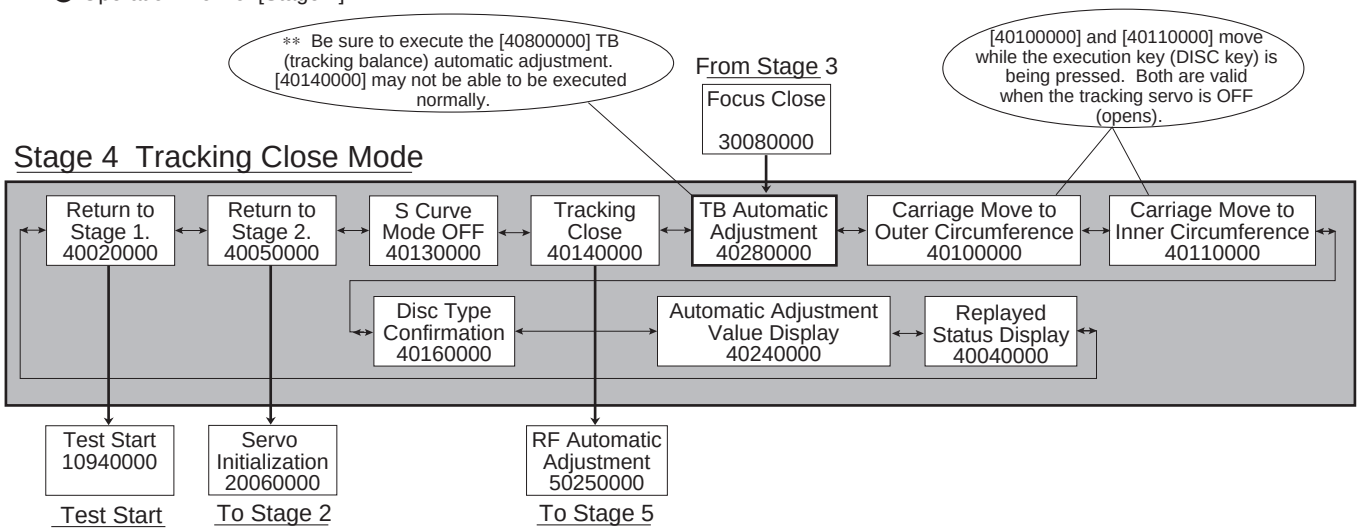
● Contents of Test

	Command number	Test name	Test contents	Test contents selection item setting	Return value
			Execute test contents:Press the DISC key. Return to command number display: Re-press the DISC key.	Selection switching:Pressing the TRACK UP/DOWN key	
Press the 1 key →	30330000	OEIC gain switching	** Factory Mode ** Switch an OEIC gain.	A High/Low gain is selected. [30331000] gain High [30330000] gain Low	 00000000(for Low gain) 00000001(for Low gain)
	30240000	Automatic adjustment value display	Displays an automatic adjustment result of a servo system.	An adjustment value to be displayed is toggle-selected. Display at selection "0"[30240XXX] "1"[30241XXX] "2"[30242XXX]	Refer to the appended table.
	30040000	Replayed status display	Displays a replayed status.		00000000(at Servo OFF) 01010101 (Servo initialization state) 02020202(at focus servo ON) ID number (at DVD replay) MSF number (at CD replay)
	30020000	Return to Stage 1	Returns to Stage 1.		00000000
	30050000	Return to Stage 2	Returns to Stage 2.		00000000
← Press the 2 key	30080000	Folcal close	Moves up and down the actuator to the focus direction. When a focal close condition is . satisfied, turn on focal servo		00000000
	30130000	Turn on the LD	Executes the ON/OFF of laser diode (LD).	An LD to be turned on/off is selected. [30130000] DVD LD (650 mm) [30131000] CD LD (780 mm)	00007801 (at CD LD ON) 00007800(at CD LD OFF) 00006501(at DVD LD OFF) 00006500(at DVD LD OFF)
	30090000	S curve mode IN	Turn on/off the S curve confirmation mode.		00000000
	30100000	Carriage move to outer circumference	Moves the carriage to the outer circumference		32100000
	30110000	Carriage move to inner circumference	Moves the carriage to the inner circumference.		32110000
	30220000	EQ measurement mode	** Factory Mode ** Forcibly turn on the servo of focus and tracking and check the characteristics of servo ED.		00000000

Stage 4

● Outline
[Stage 4] is used for measuring a servo system. (Tracking close)

● Operation Flow of [Stage 4]


** Be sure to execute the [40800000] TB (tracking balance) automatic adjustment. [40140000] may not be able to be executed normally.
From Stage 3
Focus Close
30080000
[40100000] and [40110000] move while the execution key (DISC key) is being pressed. Both are valid when the tracking servo is OFF (opens).
Stage 4 Tracking Close Mode
Return to Stage 1. 40020000
Return to Stage 2. 40050000
S Curve Mode OFF 40130000
Tracking Close 40140000
TB Automatic Adjustment 40280000
Carriage Move to Outer Circumference 40100000
Carriage Move to Inner Circumference 40110000
Disc Type Confirmation 40160000
Automatic Adjustment Value Display 40240000
Replayed Status Display 40040000
Test Start 10940000
Servo Initialization 20060000
RF Automatic Adjustment 50250000
Test Start
To Stage 2
To Stage 5

● Execution of Test Execution

• Tracking servo system measurement/Go to the next stage: Execute [40280000] and [40140000] in this order.

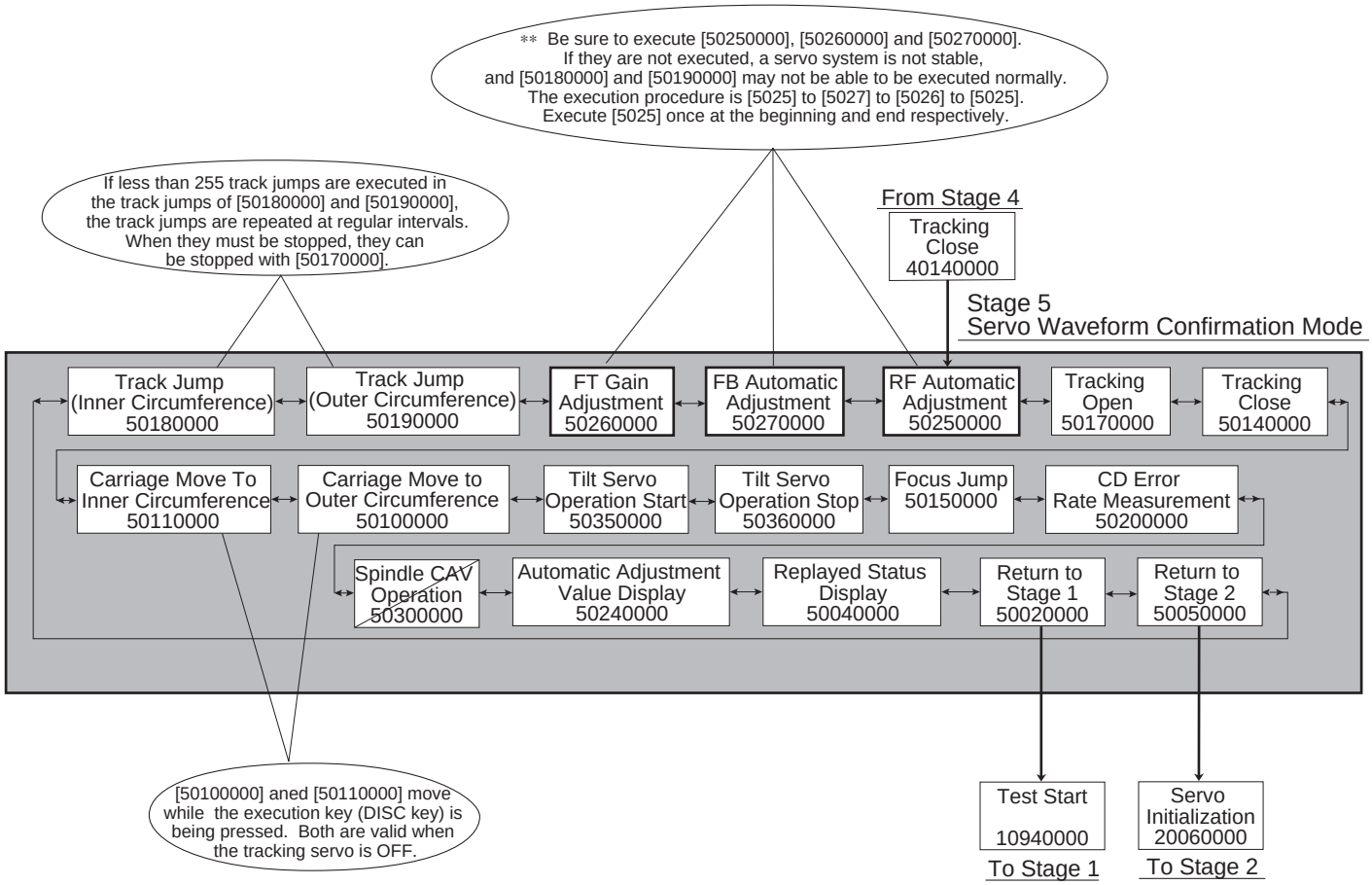
● Contents of Test

	Command number	Test name	Test contents Execute test contents: Press the DISC key. Return to command number display: Re-press the DISC key.	Test contents selection item setting Selection switching: Pressing the TRACK UP/DOWN key	Return value
Press the 1 key →	40020000	Return to Stage 1	Returns to Stage 1.		00000000
	40050000	Return to Stage 2	Returns to Stage 2.		00000000
	40130000	S curve mode OFF	Turns off the S curve confirmation mode.		00006500
	40140000	Tracking close	Turns on the tracking servo.		00000000
	40280000	TB automatic adjustment	Automatically executes a tracking balance adjustment.		00000000
	40100000	Carriage move to outer circumference.	Moves the carriage to the outer circumference.		42100000
	40110000	Carriage move to inner circumference	Moves the carriage to the inner circumference.		42110000
	40160000	Disc type confirmation	A disc type selected for [disc type (2007000)] can be checked.		00000000(at CD selection) 00000001 (at DVD1 layer selection) 00000002 (at DVD2 layer selection) 00000003(Reserved)
← Press the 2 key	40240000	Automatic adjustment value display	Displays an automatic adjustment result of a servo system.	Toggle-selects an adjustment value to be displayed. Display at selection "0"[40240XXX] "1"[40241XXX] "2"[40242XXX]	Refer to the appended table.
	40040000	Replayed status display	Displays a replayed status.		00000000(at servo OFF) 01010101 (Servo intitialization state) 02020202(at focus servo ON) ID No. (at DVD replay) MSF No. (at CD replay)

Stage 5

● Outline
[Stage 5] is used for measuring a servo system.

● Operation Flow of [Stage 5]


** Be sure to execute [50250000], [50260000] and [50270000].
If they are not executed, a servo system is not stable,
and [50180000] and [50190000] may not be able to be executed normally.
The execution procedure is [5025] to [5027] to [5026] to [5025].
Execute [5025] once at the beginning and end respectively.
If less than 255 track jumps are executed in the track jumps of [50180000] and [50190000], the track jumps are repeated at regular intervals. When they must be stopped, they can be stopped with [50170000].
From Stage 4
Tracking Close 40140000
Stage 5
Servo Waveform Confirmation Mode
Track Jump (Inner Circumference) 50180000
Track Jump (Outer Circumference) 50190000
FT Gain Adjustment 50260000
FB Automatic Adjustment 50270000
RF Automatic Adjustment 50250000
Tracking Open 50170000
Tracking Close 50140000
Carriage Move To Inner Circumference 50110000
Carriage Move to Outer Circumference 50100000
Tilt Servo Operation Start 50350000
Tilt Servo Operation Stop 50360000
Focus Jump 50150000
CD Error Rate Measurement 50200000
Spindle CAV Operation 50300000
Automatic Adjustment Value Display 50240000
Replayed Status Display 50040000
Return to Stage 1 50020000
Return to Stage 2 50050000
[50100000] aned [50110000] move while the execution key (DISC key) is being pressed. Both are valid when the tracking servo is OFF.
Test Start 10940000
To Stage 1
Servo Initialization 20060000
To Stage 2

● Example of Test Execution
- CD error rate measurement:
  Execute [50250000]→[5027000]→[50260000]→[50250000] and [50200000] Measurement in this order.
- Tilt servo measurement:
  Execute [50250000]→[5027000]→[50260000]→[50250000]→[50350000] Measurement and [50360000] in this order.
- Focus Jump measurement:
  Execute [50250000]→[5027000]→[50260000]→[50250000] and [50150000] Measurement in this order.
- Track jump measureme:
  Execute [50250000]→[5027000]→[50260000]→[50250000]→[50180000] or [50190000] Measurement in this order.

● Contents of Test

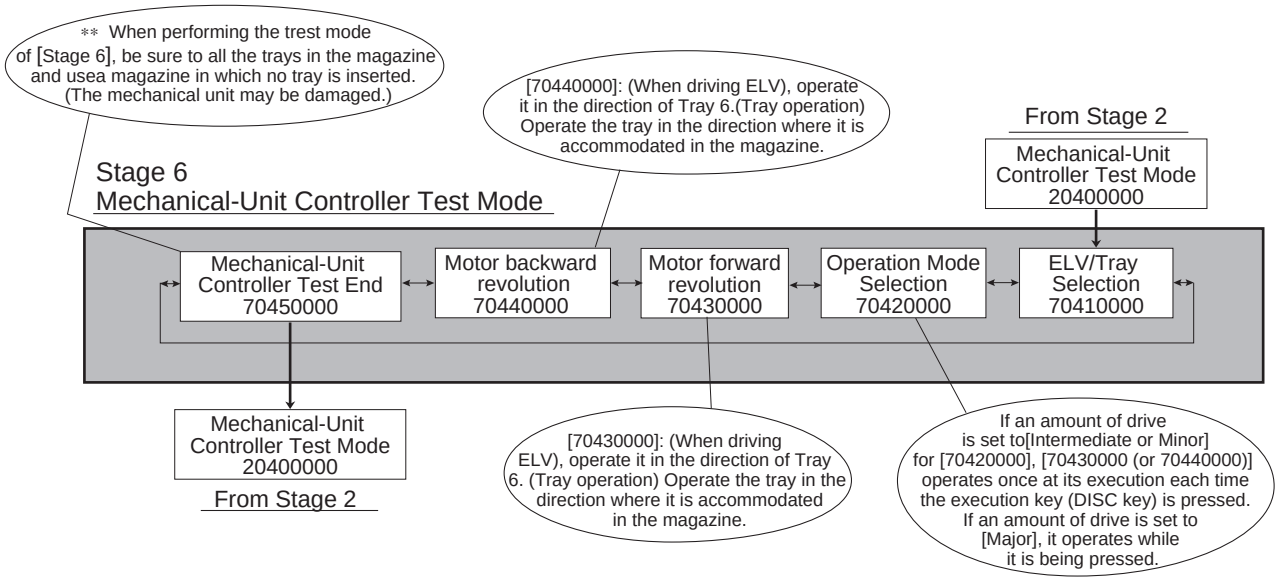
	Command number	Test name	Test contents Execute test contents: Press the DISC key Return to command number display: Re-press the DISC key.	Test contents selection item setting Selection switching: Pressing the TRACK UP/DOWN key	Return value
Press the 1 key →	50110000	Carriage move to inner circumference	Moves the carriage to the inner circumference side.		52110000
	50100000	Carriage move to outer circumference	Moves the carriage to the outer circumference side.		52100000
	50350000	Tilt servo operation start	Turns on the liquid crystal tilt servo.		00000000
	50360000	Tilt servo operation stop	Turns off the liquid crystal tilt servo		00000000
	50150000	Focus jump	Executes the focal jump of the a DVD2 layer disc.(Swith the layer for which focus is adjusted(between the first and second layes)).		00000000(at Layer 0 after jump) 00000001(at Layer 1 after jump)
	50200000	CD error rate measurement		Measures a C1 error rate of CD. (Usually five seconds) Once the execution key has been pressed, the test enters the number of sampling items setting mode with return value 51200100. ···Refer to theappended table.	A sampling time of 1 to 30 seconds is set. 52200000(during sampling) ↓ A C1 error rate is exponentially displayed.
	50300000	Spindle CAV operation	** Factory Mode ** Rotates a spindle at a constant speed at 10 Hz for DVD.		00000000
	50240000	Automatic adjustment value display	Displays an automatic adjustment result of a servo system.	Toggle-selects an adjustment value to be displayed. Display at selection "0"[50240XXX] "1"[50241XXX] "2"[50242XXX]	Refer to the appended table.
← Press the 2 key	50040000	Replayed status display	Displays a replayed status.		00000000(at servo OFF) 01010101(Servo intitialization state) 02020202(at focus servo ON) ID number (at DVD replay) MSF number (at CD replay)
	50020000	Return to Stage 1	Returns to Stage 1.		00000000
	50050000	Return to Stage 2	Returns to Stage 2.		00000000
	50180000	Track jump (Inner circumference)	Executes a track jump having the specified number of tracks to the outer circumference.	The number of tracks to jump is specified. Refer to the appended table.	The number of specified tracks is displayed in hexadecimal notation.
	50190000	Track jump	Executes a track jump having the circumference.	The number of tracks to jump is specified.) Refer to the appended table.	The number of specified tracks is displayed in hexadecimal notation.
	50260000	FT gain adjustment	Executes focus and tracking gain adjustments. (Automatic adjustment)		00000000
	50270000	FB automatic adjustment	Exceutes a focus balance adjustment. (Automatic adjustment)		00000000
	50250000	RF automatic adjustment	Executes an RF gain adjustment. (Automatic adjustment)		00000000
	50170000	Tracking open	Turns off tracking servo.		00000000
	50140000	Tracking close	Turns on tracking servo.		00000000

Stage 6

● Outline

[Stage 6] is used for checking the ELV (elevation)/tray operation of a mechanical unit.

● Operation Flow of [Stage 6]


** When performing the trest mode of [Stage 6], be sure to all the trays in the magazine and usea magazine in which no tray is inserted. (The mechanical unit may be damaged.)
[70440000]: (When driving ELV), operate it in the direction of Tray 6.(Tray operation) Operate the tray in the direction where it is accommodated in the magazine.
From Stage 2
Mechanical-Unit Controller Test Mode 20400000
Stage 6
Mechanical-Unit Controller Test Mode
Mechanical-Unit Controller Test End 70450000
Motor backward revolution 70440000
Motor forward revolution 70430000
Operation Mode Selection 70420000
ELV/Tray Selection 70410000
Mechanical-Unit Controller Test Mode 20400000
From Stage 2
[70430000]: (When driving ELV), operate it in the direction of Tray 6. (Tray operation) Operate the tray in the direction where it is accommodated in the magazine.
If an amount of drive is set to[Intermediate or Minor] for [70420000], [70430000 (or 70440000)] operates once at its execution each time the execution key (DISC key) is pressed. If an amount of drive is set to [Major], it operates while it is being pressed.

● Example of Test Execution

- Mechanical-unit controller test: Execute [70410000], [70420000] and [70430000 (or 70440000)] in this order.

● Contents of Test

	Command number	Test name	Test contents Execute test contents: Press the DISC key. Return to command number display:Re-press the DISC key.	Test contents selection item setting Selection switching: Pressing the TRACK UP/DOWN key	Return value
Press the 1 key →	70450000	Mechanical-unit controller test end	Terminates the mechanical-unit controller test mode.		00000000
	70440000	Motor backward revolution	Executes motor drive.		72440000
	7043000	Motor forward revolution	Executes motor drive.		72430000
	70420000	Operation mode - selection	Sets an amount of moror drive.	An amount of drive is switched. (Switched to (Pressing the DISC key) every execution) [70420000]An amount drive is Minor. [70410000]An amount fo drive is Intermediate. [70422000]An amount of drive is Major.	00000000(at Minor amount of drive) 00000001(at Intermediate amount of drive) 00000002(at Majo amount of drive)
← Press the 2 key	70410000	ELV/tray selection	Selects a motor to be operated.	Either the ELV motor or tray motor is swithed. (Switched to (Pressing the DISC key) every execution) [70410000]ELV motor selection [70411000]Tray motor selection	00000000(at ELV motor selection) 00000001(at tray motor selection)

TEST MODE APPENDED TABLE

● [X0240000]Return Value Table of Automatic Adjustment Values. <Normal Values after Replay>

		For DVD	For CD
"0" [00⑥⑤④③②①]	⑥⑤ : F offset adjustment value	-	-
	④③ : T offset adjustment value	00h	00h
	②① : F. BAL adjustment value	-	-
"1" [00⑥⑤④③②①]	⑥⑤ : F. AGC adjustment value	E7h~1Fh	E7h~1Fh
	④③ : T. AGC adjustment value	E7h~1Fh	E7h~1Fh
	② : F. AGC status adjustment value	1	1
	① : T. AGC status adjustment value	1	1
"2" [00⑥⑤④③②①]	⑥⑤ : RF gain adjustment value	07h~0Fh	0Ah~12h
	④③ : Tilt servo adjustment value	7Bh~85h	
	②① : T. BAL adjustment value	-	-

● DVD Error Rate Measurement Method

[Outline procedures] [10690000]→[10700000]→[10720000]Measurement→[10730000]

∗ It is recommended that DVD error rates be measured according to the following settings

1	[10690000] EDC mode start	Starts replay.
2	[10700000] EDC mode 1	Moves the pickup to the position where an error rate is measured (an ID No. is specified). Operation 1. Execute [10700000] (press the DISC key).→Return value: 11700100 Operation 2. Then, operate the [TRACK UP/DOWN key] and the [1] [2] keys, display [11700601] or [117050F] and execute it (press the DISC key). .... Points of the following ID Nos. are indicated respectively 601 = The sixth digit is 1 = 100000h. 50F = The fifth digit is F = F0000h. .... (Application) If other ID Nos. must be specified, values can be set in the same manner as the following number of track jumps setting method.
3	[10720000] Measurement	Sets the number of sampling items and measures an error rate. Operation 1. Execute [10720000] (press the DISC key). Return value: 11720100 Operation 2. Then, operate the [TRACK UP/DOWN key] and the [1] and [2] keys, sequentially display [11720203] and [11720102] and execute them (press the DISC key). .... [11720(1)0(2)] Enter (1) and (2) in this order. Both [11720203] and [117200102] can be entered previously. .... The number of sampling items is set according to Operation 2. 203 = The two digit is 3 = 30, 102 = The first digit is 2 = 2 and the result is "32" in total. .... (Application) If other ID Nos. must be specified, values can be set in the same manner as the following number of track jumps setting method.

● [50200000] CD Error Rate Measurement Method

∗ It is recommended that DVD error rates be measured according to the following settings.

[50200000] Measurement	Sets a sampling time and measures an error rate. Operation 1. Execute [50200000] (press the DISC key). Return value: 51200100 Operation 2. Then, operate the[TRACK UP/DOWN key] and the [1] and [2] keys, display [51200105] and execute it (press the DISC key). .... The sampling time is set to"five seconds" according to Operation 2. 105 = The first digit is 5 = 5 seconds .... If other ID Nos. must be specified, values can be set in the same manner as the following number of track jumps setting method.

● [50180000] or [50190000] Number of Track Jumps Measurement Method

[50180000] Jump	Sets the number of jumps and performs a track jump. Operation 1. Execute [50180000] (press the DISC key). Return value: 51180100 Operation 2. Then, operate the [TRACK UP/DOWN key] and the [1]and [2] keys, enter (1) and (2) of [51180(1)0(2)] and execute them (press the DISC key). .... First enter (1) (the "number of digits" of a value set). Then enter (2) (the value of the number of digitsset for (1)). The value of each digit can be corrected even any times until the execution key is pressed. Example) [511810105] [511810205] [511810306] [511810103] Execute (Press the DISC key). The 653 track jump is executed. (Before execution, the first digit is changed from 5 to 3.) .... If a track jump of less than 255 is specified, the track jump is repeated at regular intervals until tracking open [50170000].

● Error No. Display

When the DVD cannot operate or if it stopped due to an error during operation, an error mode occurs and the cause of the error is displayed in numerals. An object of this error No. display is to reduce the nonsense call of the user and aid in the analysis/repair in the service.

1) Summary of error display

* If major classification error codes are blank, no detailed error codes are not displayed in normal use. Check them for the detailed error codes of the test mode.

Error code				Type	Contents	Details and cause
Diagnosis mode	EMV on-screen display	Major classification	Detailed code			
			01	Electricity	System Controller Peripheral Check Error	SRAM access check error * 1
			02	Electricity	System Controller Peripheral Check Error	A0-A16 address line check error * 1
			03	Electricity	System Controller Peripheral Check Error	Program flash ROM read access check error * 1
			04	Electricity	System Controller Peripheral Check Error	GUI flash ROM read access check error * 1
			05	Electricity	System Controller Peripheral Check Error	MPEG decoder read access check error * 1
			06	Electricity	System Controller Peripheral Check Error	MY-CHIP access check error * 1
			07	Electricity	System Controller Peripheral Check Error	Track buffer access check error * 1
			08	Electricity	System Controller Peripheral Check Error	Track buffer address line check error * 1
			09	Electricity	System Controller Peripheral Check Error	CD-ROM error correction IC access check error * 1
			0A	Electricity	System Controller Peripheral Check Error	Pull up/down check error * 1
			11	Electricity	Flash ROM Error	Flash ROM ID code differs →Flash ROM contents are damaged
			12	Electricity	Flash ROM Error	Flash ROM ID code differs →Flash ROM contents are damaged
			13	Electricity	Flash ROM Error	Flash ROM silicone signature differs →Flash ROM contents are damaged.Wiring between flash ROM and system controller is disconnected
			14	Electricity	Flash ROM Error	Flash ROM size differs →Flash ROM contents are damaged.Wiring between flash ROM and system controller is disconnected

Error code					Contents	Details and cause
Diagnosis mode	EMV on-screen display	Major classification	Detailed code	Type		
			15	Electricity	Flash ROM Error	Flash ROM checksum differs →Flash ROM contents are damaged
			16	Electricity	Flash ROM Error	Write protection is not applied to flash ROM →Flash ROM contents are damaged.Wiring between flash ROM and system controller is disconnected.
			17	Electricity	Flash ROM Error	No reset vector is written to the first address of flash ROM →Flash ROM contents are damaged
			31	Electricity	CPU Peripheral Hardware Fault	Undefined interrupt occurs in ROM →Wiring is disconnected or short-circuited on main unit
			32	Electricity	CPU Peripheral Hardware Fault	General invalid instruction occurs in ROM →Wiring is disconnected and short-circuited on main unit
			33	Electricity	CPU Peripheral Hardware Fault	Slot invalid instruction interrupt occurs in ROM →Wiring is disconnected and short-circuited on main unit
			34	Electricity	CPU Peripheral Hardware Fault	CPU address error interrupt →Wiring is disconnected and short-circuited on main unit.
			35	Electricity	CPU Peripheral Hardware Fault	Undefined interrupt occurs in flash ROM →Wiring is disconnected and short-circuited on main unit
			36	Electricity	CPU Peripheral Hardware Fault	General invalid interrupt occurs in flash ROM →Wiring is disconnected and short-circuited on main unit.
			37	Electricity	CPU Peripheral Hardware Fault	Slot invalid instruction occurs in flash ROM →Wiring is disconnected and short-circuited on main unit.
			38	Electricity	CPU Peripheral Hardware Fault	CPU address error occurs in flash ROM →Wiring is disconnected and short-circuited on main unit.
			39	Electricity	CPU Peripheral Hardware Fault	DMA address error is detected in flash ROM →Wiring is disconnected and short-circuited on main unit.
44	The DVD is stopping due to error detection	Error2 or 5	80	Mechanism	Address Not Found	Mechanism controller error code F2 XXXX
47	The DVD is stopping due to error detection	Error3	81	Electricity	Heat Error	Pickup section is excessively heated.
45	The DVD is stopping due to error detection	Error5	82	Mechanism	Eject Error	MAG switch disconnection wait timeout Elevation timeout at ejection
50	The DVD is stopping due to error detection	Error5	83	Mechanism	Tray Existence/Nonexistence Error	Tray withdrawal or insertion operation timeout Tray is hooked at tray withdrawal
51	The DVD is stopping due to error detection	Error5	84	Mechanism	Elevation Error	Timeout at elevation operation
46	Check the X-th disc	Error2	90	Electricity	Focus Search Error	Focus is disabled →Disc upside down, scratches, dirt and vibration are strong
46	Check the X-th disc	Error5	91	Electricity	Spindle Lock Error	Because spindle lock is not done, subcode cannot be read →Spindle is faulty and disc scratches, dirt and vibration are strong.

Error code					Contents	Details and cause
Diagnosis mode	EMV on-screen display	Major classification	Detailed code	Type		
44	Check the X-th disc	Error2	92	Electricity	Carriage Home Error	Movement is disabled to inner circumference and movement is disabled from inner circumference →Home SW is faulty and carriage movement is faulty
46	Check the X-th disc	Error2	93		FOK Error	Mechanism error code F8 0013
46	Check the X-th disc	Error2	94	Electricity	ID/SUBCODE Error	Subcode cannot be read →Spindle is faulty and disc scratches, dirt and vibration are strong.
46	Check the X-th disc	Error2	95	Mechanism	Spindle High Revolution Error	Mechanism error code F8 0015
46	Check the X-th disc	Error2	96	Mechanism	Spindle Low Revolution Error	Mechanism error code F8 0016
	The DVD is stopping due to error detection	Error6	97	Electricity	Mechanism Unit Reference Voltage Error	Elevation positioning is disabled →Power fault and control volume resistor is faulty.
			98	Electricity	TOC Error	Mechanism error code FA XXXX
			B0	Electricity	Mechanism controller Communication Error	Communication is disabled between mechanism controller and system controller. →Wiring is disconnected and short-circuited on main unit.
			B1	Electricity	Mechanism controller Communication Timeout	Mechanism controller does not respond. →Wiring is disconnected and short-circuited on main unit.
			B2	Electricity	Unexpected Error in Mechanism Controller Communication	
			B3	Electricity	Communication Error between BUS Microcomputer and System Controller	No communication is done from BUS microcomputer. →Wiring between main unit and extension unit is disconnected and short-circuited.
	Region code error	Error09	A0	Electricity	Region Code Error	DVD disc having region code which cannot be played back
	Check the X-th disc		A1	Electricity	Digital Copy Guard Error	DVD disc violated against digital copy guard
	Check the X-th disc		A2	Electricity	DVD File System Read Error	DVD data read error →Defective carriage/tracking and disc scratches
	Check the X-th disc		A3	Electricity	DVD Search Timeout Error	Target address could not be reached. →Defective carriage/tracking and disc scratches
46	Check the X-th disc		A4	Electricity	CD-ROM Read Error	Disc data cannot be read →Spindle is faulty and disc scratches, dirt and vibration are strong.
46	Check the X-th disc		A5	Electricity	DVD Read Error	Disc scratches
46	Check the X-th disc		A6	Electricity	Video CD Read Error	Disc scratches
			C0	Electricity	System Controller Communication Error	Communication is disabled between system controller and BUS microcomputer. →Wiring between main unit and extension unit is disconnected and short-circuited.
47	The DVD is stopping due to error detection		C1	Electricity	Low Temperature Detection ... temperature.	Equipment temperature is lower than operable

Error code					Contents	Details and cause
Diagnosis mode	EMV on-screen display	Major classification	Detailed code	Type		
	The DVD is stopping due to error detection	Error-06	C4	Electricity	Power Supply Fault	Higher or lower than specified voltage in 9 V-system power supply, otherwise no power is issued. →Defective switching transistor and power supply fault
	The DVD is stopping due to error detection	Error-06	C5	Electricity	Power Supply Fault	Higher or lower than specified voltage in 3.3 V-system power supply, otherwise no power is issued. →Defective switching transistor and power supply fault
	The DVD is stopping due to error detection	Error-06	C6	Electricity	Power Supply Fault	Higher or lower than specified voltage in 2.5 V-system power supply, otherwise no power is issued. →Defective switching transistor and power supply fault
	The DVD is stopping due to error detection	Error-06	C7	Electricity	Power Supply Fault	Higher or lower than specified voltage, otherwise no power is issued. →Defective switching transistor and power supply fault
	The lid of the DVD is opening	Error-01		Mechanism	Door Opens.	Because door opens, this equipment mechanism stops
	No disc is loaded			Mechanism	Empty Magazine Insertion	There is no disc.

* 1: This code is detected only when the system controller peripheral test was executed in the test mode.

● Debug Mode

An object of this debug mode is to aid in the analysis/repair in the service by displaying the version display, error rate and error history of the microcomputer when this equipment was stopped due to a fault.

• How to enter the debug mode

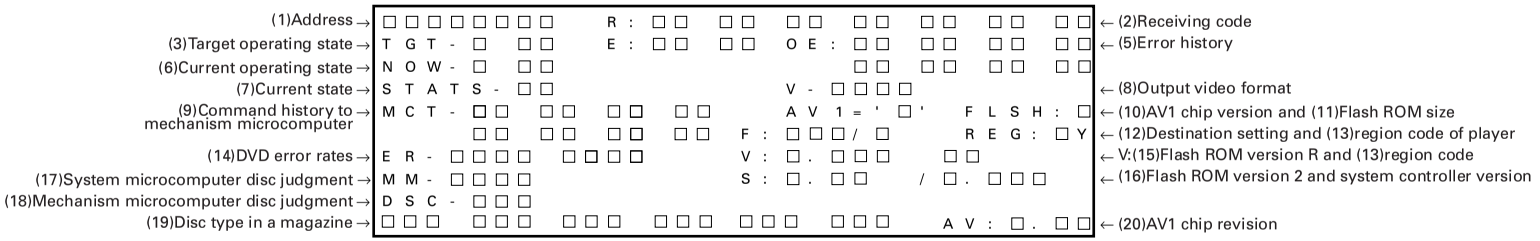
Follow the procedures below.

1. Enter the test mode.
2. Set the normal mode debug screen (00850000).
3. Set AccON to OFF.
4. Continue pressing the EJECT key for five seconds with the door closed.
5. Set AccOFF to ON without releasing the EJECT key as is.

• Debug mode reset

Acc OFF.

• Screen configuration


(1)Address →
(3)Target operating state →
(6)Current operating state →
(7)Current state →
(9)Command history to mechanism microcomputer →
(14)DVD error rates →
(17)System microcomputer disc judgment →
(18)Mechanism microcomputer disc judgment →
(19)Disc type in a magazine →
← (2)Receiving code
← (5)Error history
← (8)Output video format
← (10)AV1 chip version and (11)Flash ROM size
← (12)Destination setting and (13)region code of player
← V:(15)Flash ROM version R and (13)region code
← (16)Flash ROM version 2 and system controller version
← (20)AV1 chip revision

● Explanation of Display Contents by Item

(1) Address display

This item displays the address which is being traced currently.

DVD	******* ID display (8 hexadecimal digits)
CD/VCD	0000**** A-TIME (minutes and seconds)
CD	00000000 Fixed

(2) Receiving code — R: ** ** **

This item displays the command transferred from the BUS microcomputer to the system controller.

(3) Target operating state — TGT: * **

This item displays the number of the tray to which playback operation is being attempted and the internal state of the player.

Number of tray	1-6	
Internal state of player	01	Disc changing
	02	Waiting for power-off
	03	Stopping
	04	Disc being detected
	05	During setup
	06	TOC being read
	07	During playback
	08	Searching

(4) Error number — E : ** **

This item displays the current error number.

(5) Error history — OE : ** ** ** **
** ** ** **

This item displays the past error history.

The upper left is the latest error number. The same number as the current error number is displayed in an error state.

This error history is stored in flash ROM and will not be cleared even for backup OFF.

(6) Current operating state — NOW : * **

This item displays the number of the current tray and the internal state of the player.

Number of tray	1-6	
Internal state of player	01	Disc changing
	02	Waiting for power-off
	03	Stopping
	04	Disc being detected
	05	During setup
	06	TOC being read
	07	During playback
	08	Searching

(7) Status display — STATS- **

This item displays the internal state of the current player.

00	No tray is selected.
01	Tray 1 is selected.
02	Tray 2 is selected.
03	Tray 3 is selected.
04	Tray 4 is selected.
05	Tray 5 is selected.
06	Tray 6 is selected.
81	Tray 1 disc is changing.
82	Tray 2 disc is changing.
83	Tray 3 disc is changing.
84	Tray 4 disc is changing.
85	Tray 5 disc is changing.
86	Tray 6 disc is changing.

TOC information read step information. — TOC:

(8) Output video formats — V-****

NTSC (National Television System Committee) method	[NTSC]
PAL (Programmable Array Logic) method	[PAL]
Automatic setting	[AUTO]

(9) Command history to mechanical-unit microcomputer
This item displays past commands from left to right and from up to down.
Commands

MCT : ** ** ** **
** ** ** **

01	Communication Start
02	Stop
03	Seek
04	Read
05	Pause
06	Fast Forward
07	Reverse
08	Disc Replacement
09	Get Address
0A	Get Power Startup State
0B	Get Disc Information
0C	Get Final Mechanism Controller Error Status
0D	Communication Reset
0E	Test Mode ON
10	Get Control Data
11	Get TOC Information (CD Only)
12	Get Magazine Information
14	Get CD Address
15	EJECT
16	Power-Off Processing
17	EJECT Interrupt

(10) AV1 chip revision
This item displays a revision of the AV1 chip.

AV1 = '*'

(11) Flash ROM size
This item displays a size of flash ROM.

FLSH : *

(12) Destination setting

F : *** / *

(13) Region setting

REG : *Y
R : *

This item displays the region setting of the player.

(14) Error rate display

ER- **** ****

Error rates are displayed for DVD (displayed only for DVD).
C1 error rate for disc playback is displayed.
To ensure calculation accuracy, the number of errors is being counted in a unit of 16 blocks.
(C1 1block) = (182bytes x 208line = 37856bytes)
(C1 16block) = (182bytes x 208line = 16block = 605696bytes)
The minimum resolution is set to 1.65099E-6 .
Usually, an error rate is less than 1.0E-3 .

(15) Flash ROM version 1
Version of the high-level module in flash ROM.

V : *. *** *

Flash ROM version.

**

(16) Flash ROM version 2 and system controller version display
These items display a version of a low-level module in flash ROM.

S : *. **

The version of the ROM incorporated in the system controller.

*. ***

(17) Disc judgment(System microcomputer) MM : ***

	Disc not decided
NON	No disc
DSC	Disc of type not fixed
NG	No match etc.
CD	CD (format not decided)
CDP	CD partial disc
CDC	CD combined disc
D	DVD (format not decided)
DVD	DVD (Region not decided)
DNG	DVD (Disc which cannot be played back due to a region error)
DOK	For DVD
CDA	For CD-DA
CDR	For CD-ROM
VC1	For VCD(Ver1.1)
VC2	For VCD(Ver2.0)

(18) Disc judgment(Mechanism microcomputer) DSC : ***

This item displays the type of the disc which is being clamped.

NON	No disc
DVD	For DVD
CD	For CD
VCD	For VCD

(19) Disc type in a magazine For six sheets

The display format is the same as the system microcomputer decision results of item 17.

(20) AV1 chip version AV1:*.***

Function description

Clear error histories by pressing the upper left section of the screen ten consecutive times.

7.1.2 DISASSEMBLY

Note:
When disassembling a product, be sure to set the PU unit short circuit switch to the short circuit direction.
Vertical and horizontal specifications of a product
The vertical and horizontal specifications of a product are switched by switching the spring hooking position using an arm. At normal assembly and disassembly, the arm switches the position at the position which conforms to the horizontal specifications. However, because this product conforms to the vertical specifications, take notice not to forget the changeover.
The changeover position and method are as follows:
Because a changeover arm is provided in the hole near by the center of the product left and right sides, use the arm to switch the position. For the confirmation of the position, because H and V are marked on the top case. Accordingly, to assemble a product, adjust H and V conforming to the installation specifications of the product.

● **Removing the Upper Case (Fig.6)**

1 Remove the eight screws.

2 Remove the screw and then remove the Upper Case.

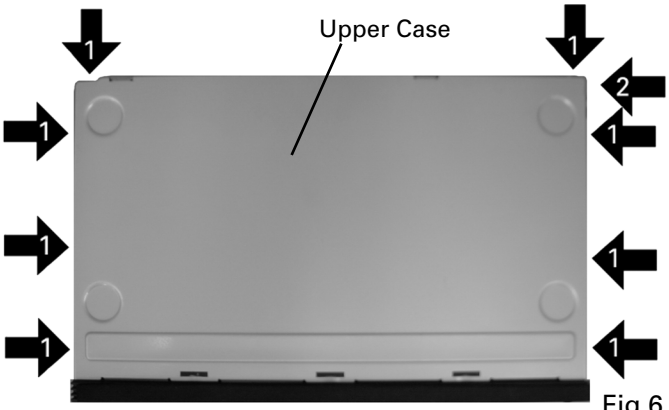


Fig.6

● **Removing the DVD/CD Mechanism Unit (Fig.7)**

1 Remove the four dampers.

2 Remove the two springs.

Disconnect the connector and then remove the DVD/CD Mechanism Unit.

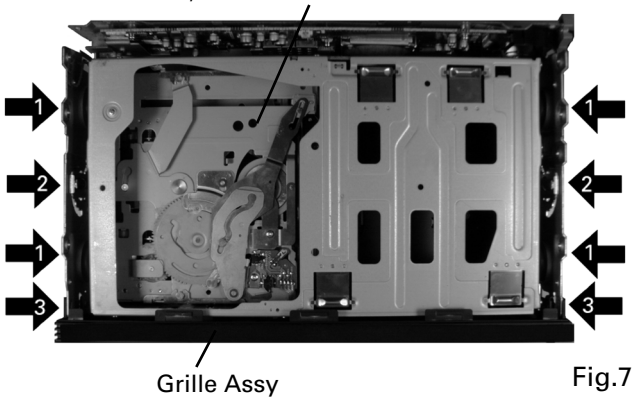


Fig.7

● **Removing the Grille Assy (Fig.7)**

3 Remove the two screws and then Remove the Grille Assy.

● **Removing the Extension Unit(Fig.8,9)**

1 Remove the screw. (Fig.8)

2 Remove the two screws. (Fig.8)

3 Remove the four screws. (Fig.9)

4 Disconnect the connector and then remove the Extension Unit. (Fig.9)

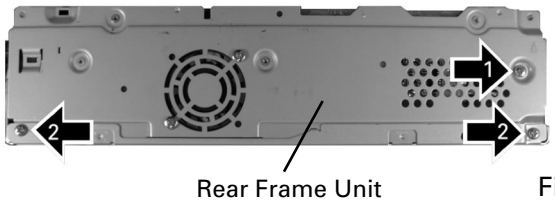


Fig.8

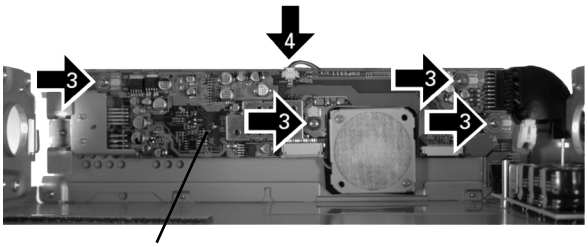


Fig.9

● **Removing the MF Unit (Fig.10)**

1 Remove the three screws and then remove the MF Unit.

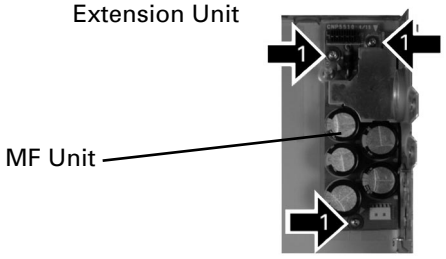


Fig.10

Precautions when making servicing works

1) Since the upper surface of the arrowed magazine slot in the DVD/CD mechanism unit can be deformed comparatively easily, do not hold this section when making servicing work. (Refer to Fig. 11)

2) The stage mechanism projects downward beyond the low end of the chassis when it is reset. Consequently, the stage mechanism may be damaged to cause functional failures when handled carelessly. When placing the mechanism, pay great attention not to damage the gear and the pickup unit.

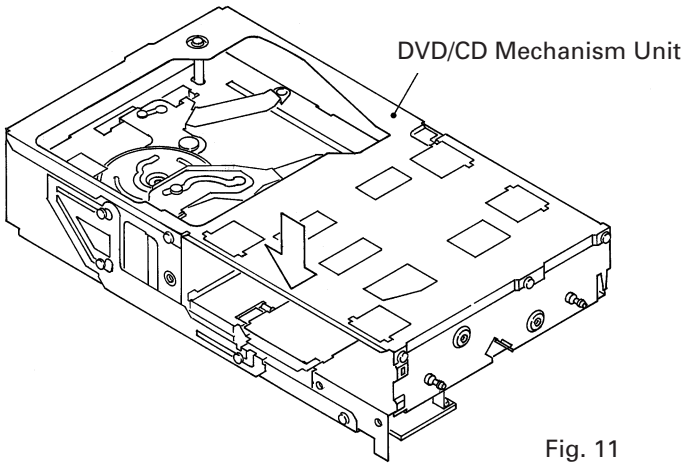


Fig. 11

● **Removing the pickup unit**

1. Set the short switch of the pickup unit to the SHORT side.
2. Remove the flexible PCB from the connector.
3. Unscrew one screw A to remove the grease cover.
4. Unscrew one screw B to remove the plate spring A.
5. Unscrew one screw C to remove the plate spring B.
6. Remove the pickup unit together with the main shaft.
7. Remove the cushion from one side only to pull out the main shaft. AT this time, pay attention not to lose the removed cushion.

● **Removing the PCB unit(B)**

1. Remove soldering from the linear position sensor (VR301).
2. Unscrew the two screws D to remove the PCB unit(B).

● **Precautions when installing the linear position sensor**

1. If the linear position sensor (VR301) is not being properly inserted into the U-groove provided in the detection lever, elevation movement failures can occur.

When installing the linear position sensor to the DVD/CD mechanism unit, be sure to insert it into the U-groove provided in the detection lever securely.

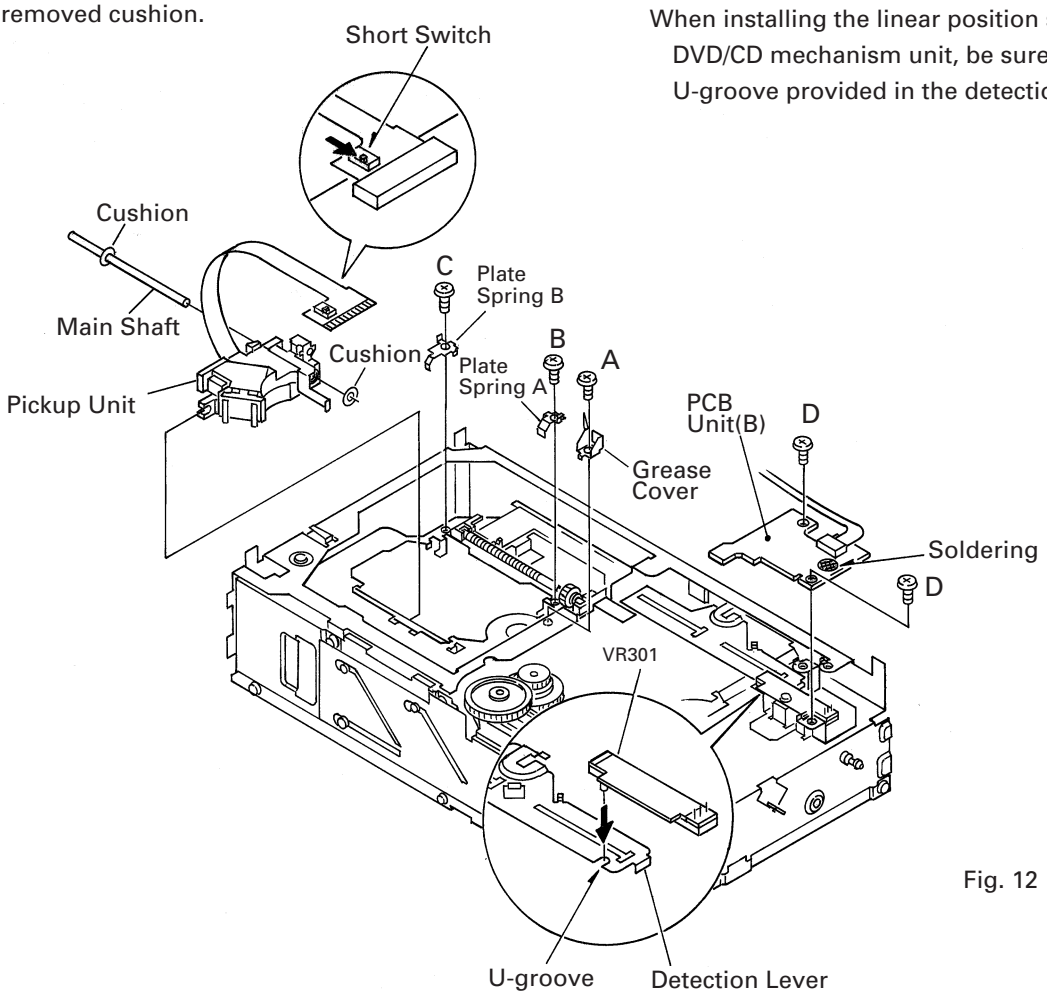
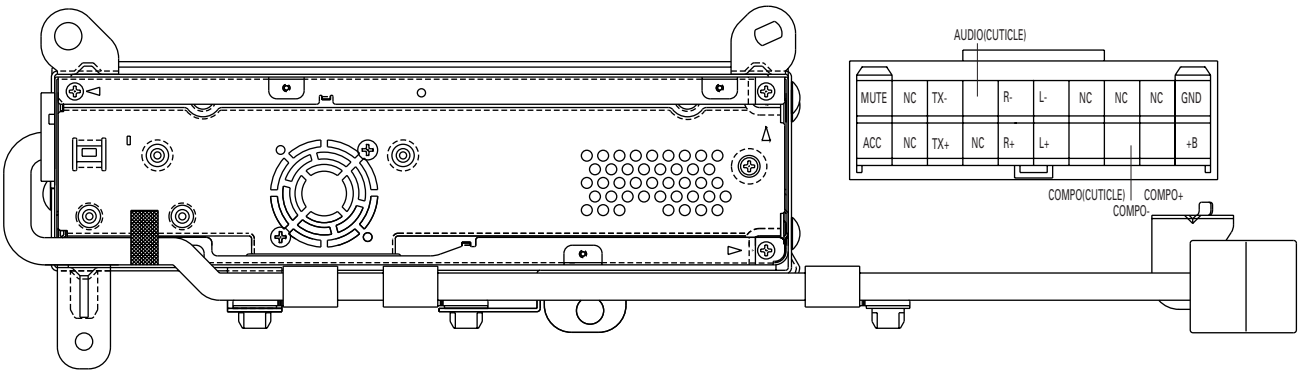


Fig. 12

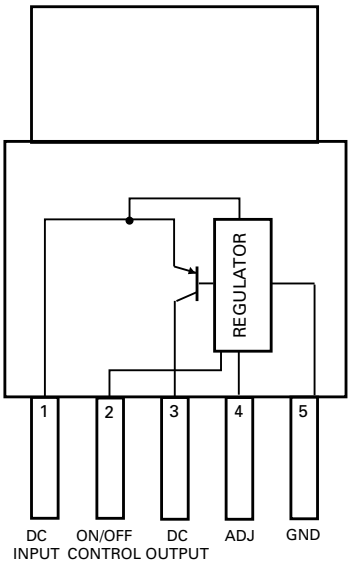
7.1.3 CONNECTOR FUNCTION DESCRIPTION



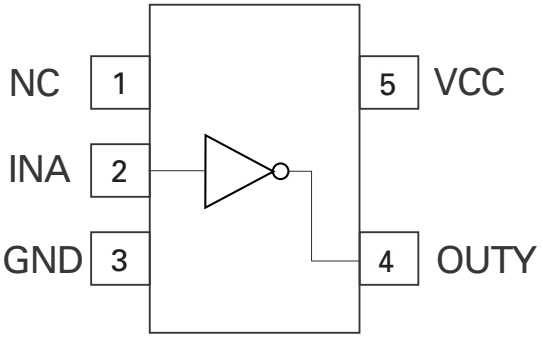
7.2 IC

PQ20VZ11	MC33202D	MB86373BPFV-G-BI
TC7SHU04FU	NJM3414AV	PD3411A
BA08SFP	TC551001CSTI-85L	TC74LCX245FT
PE5058A	TC74VHCU04FT	MSM514800CSL60JS
BA00AST	TA1254AF	MSM56V16160DP-10TS
TC74VHC238FT	TC55257DFTI-85L	TC74VHC139FT
PD5642A	PE8001A1	PD4995A
TC9461F	TC74VHCT08AFT	HA178L05UA
LC89513KP	PD6332B	BA9706K
TC7WU04FU	PD6310B	
TC4053BFT	MAX662AESA	
HD74HC245T	CY2292SI-1A0	

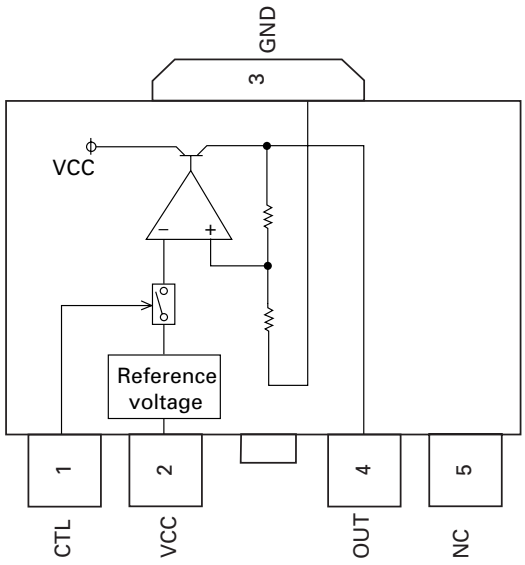
PQ20VZ11



*TC7SHU04FU



*BA08SFP

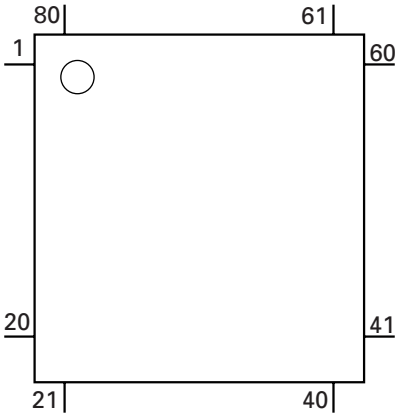


● **Pin Functions (PE5058A)**

Pin No.	Pin Name	I/O	Format	Function and Operation
1	SENS25	I		VD short sense 2.5V
2	SENS3	I		VD short sense 3V
3	NC			Open
4	AVSS			GND
5	XSRSENS	O	C	SWREG information output to mechanism controller (H : Off, L : On)
6	XADEN	O	C	AVREF0 control output
7	AVREF1			D/A converter reference voltage
8	SWREG	O	C	System power supply voltage
9	XILL			Open
10	VADCONT	O	C	Servo, liquid tilt power supply, audio power supply control output
11	SI	I		System controller communication data input
12	SO	O	C	System controller communication data output
13	SCK	O	C	System controller communication clock output
14	NC			Open
15	XRDY	O	C	Communication request to system controller (L : Communication permission)
16	XRES	O	C	System reset output (L : Reset)
17	XMRES	O	C	Mechanism controller reset output
18,19	NC			Open
20	VIOC	O	C	Image changeover switch(H:External through hole,L:MMCH output)
21-25	NC			Open
26	SYSMUTE	O	C	Mute output of AVC-LAN
27	ANSW	O	C	Analog switch control output
28	XRMUTE	O	C	Mute output for rear RCA
29-32	NC			Open
33	VSS			GND
34	DEST2	I		Destination set input
35	XVMUTE	O	C	Front video mute output (H : Mute on)
36-39	NC			Open
40	AV8CONT	O	C	Power supply control output of audio
41-46	NC			Open
47	LT1	I		Communication response from system controller (L : Communication permission)
48-51	NC			Open
52,53	FANPW1,2	O	C	Power control output of FAN
54	NC			Open
55	IEPW	O	C	IE-BUS driver STBY control output
56	IEDO	O	C	Data output for IE-BUS driver
57	IEDI	I		Data input for IE-BUS driver
58,59	NC			Open
60	XRST	I		System reset input
61	RMIN	I		Remote control input
62	XASEN	I		ACC on/off state detection input (7, 7.5 V sense)
63	XMBSEN	I		Backup state detection input (8.5 V sense)
64	XBSEN	I		Backup state detection input (7, 7.5 V sense)
65	XCLOSSEN	I		Door detection (L : Door close)
66	XEJ	I		Eject SW detection (L : Eject key)
67	XMAG	I		Magazine insert detection (L : Magazine)
68	VDD			Positive power supply
69	X2			System clock oscillation
70	X1	I		System clock oscillation input
71	IC			Connect to GND
72	NC			Open
73	TESTIN	I		Chip test mode input
74	AVDD			A/D converter analog power supply
75	AVREF0			A/D converter reference voltage

Pin No.	Pin Name	I/O	Format	Function and Operation
76	STEMP	I		System controller section high-temperature sense A/D input
77	BTEMP	I		BUS microcomputer section high-temperature sense A/D input
78	LOTEMP	I		Low-temperature sense A/D input
79	DEST	I		Destination set A/D input
80	SENS9	I		VD short sense 9V group

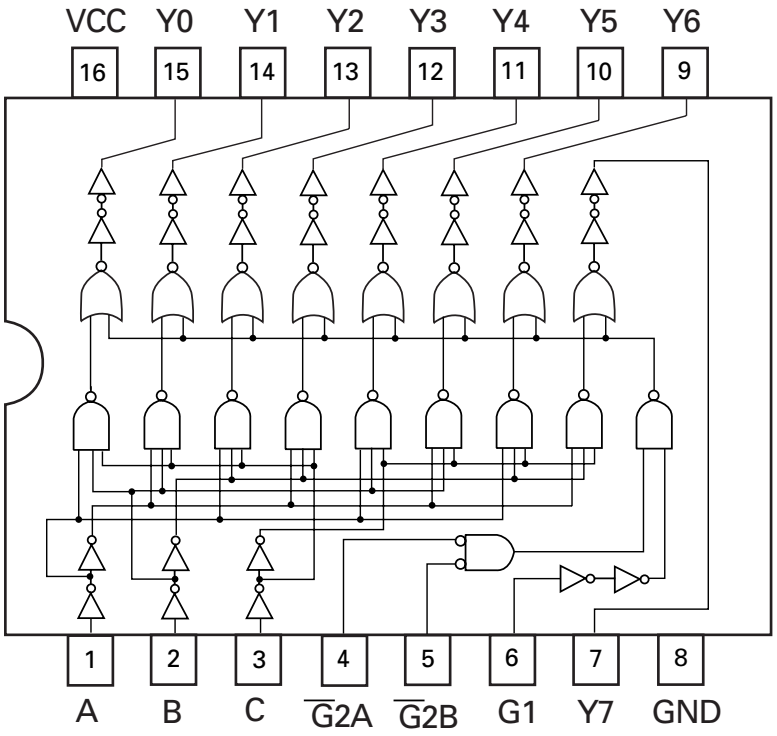
*PE5058A



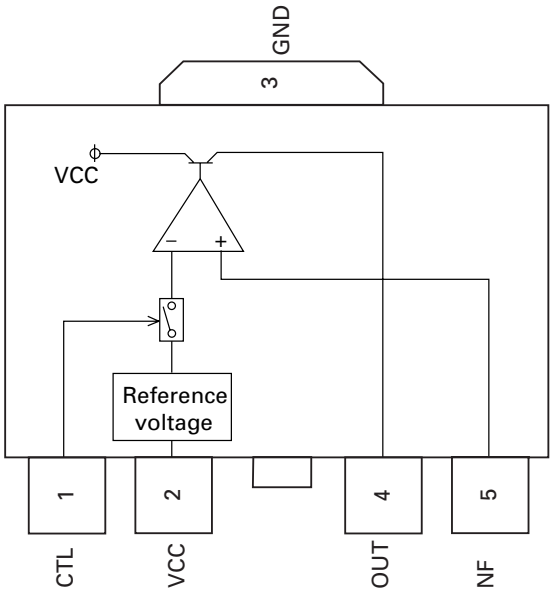
Format	Meaning
C	C MOS

IC's marked by* are MOS type.
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

*TC74VHC238FT



*BA00AST



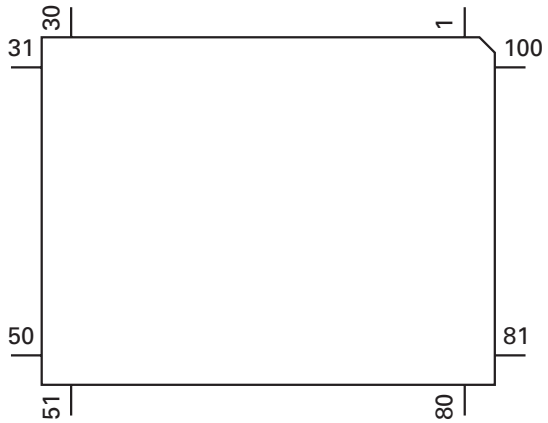
● **Pin Functions (PD5642A)**

Pin No.	Pin Name	I/O	Format	Function and Operation
1	RFSCD	O	C	TA1254AF serial data
2	RFSCB			TA1254AF bit clock
3	LCDBIAS			Liquid crystal temperature augment output
4	LCDTLT			Liquid crystal tilt augmenter control output
5	LDCONT	O	C	LD ON/OFF control output
6	PSC	O	C	VRCK deviding ON/OFF
7	FG	I		FG pulse input
8	BYTE	I		Connect to VCC
9	CNVSS			Connect to VSS
10	DSCSIZ	O	C	8cm/12cm select
11	VMCONT	O	C	9V regulator output voltage control output
12	XMRES	I		Reset input
13	XOUT	O		Main clock oscillation terminal
14	VSS			GND
15	XIN	I		Main clock oscillation terminal
16	VCC			Power supply terminal
17	NC			Not used
18	XMAG	I		Magazine detection switch input
19	NC			Not used
20	XIRQ	I		Interruption input
21	OEIC	O	C	OEIC gain select output
22	FEB			FE balance control output
23	FLGA	I		TC9461 internal signal monitor input
24	FLGB	I		TC9461 internal signal monitor input
25	FLGC	I		TC9461 internal signal monitor input
26	LCDCLK			Liquid tilt driver clock output
27	FLGD	I		TC9461 internal signal monitor input
28	TXCLK			CD-TEXT clock output
29, 30	NC			Not used
31	EEPDO	O	C	EEPROM data output
32	EEPDI	I		EEPROM data input
33	EEPSK	O	C	EEPROM clock output
34	EEPCS	O	C	EEPROM chip select
35	TEST_TX	O	C	RS232C communication data output
36	TEST_RX	I		RS232C communication data input
37	HSO	I		Play speed mode flag
38	UHSO	I		Play speed mode flag
39	XREADY	I		Wait signal input
40	ASTB	O	C	Address latch output
41	XHOLD	I		Hold signal input
42, 43	NC			Not used
44	XRD	O	C	Read signal output
45	NC			Not used
46	XWR	O	C	Write signal input
47	NC			Not used
48	LCDRS	O	C	LCD register select
49	XCS	O	C	Chip select signal output
50	CD/DVD	O	C	CD/DVD select output
51-54	LCDDT3-0	O	C	LCD display data
55	LCDEN	O	C	LCD enable
56	XCCE	O	C	Servo processor i/f
57	BUCK	O	C	Servo processor i/f
58-61	BUS3-0	I/O	C	Servo processor i/f
62	VCC			Power supply terminal
63	NC			Not used
64	VSS			GND
65-72	AD7-0	I/O	C	Address/data input/output
73	TXDQSY	I		CD-TEXT sub-code synchronous input
74	BSENS	I		Backup sense input
75	SRSENS	I		DDC sense input

Pin No.	Pin Name	I/O	Format	Function and Operation
76	OPEN			Open
77	SEEKT	O	C	SEEK time monitor output
78	I13	O	C	Motor driver control output
79	I2	O	C	Motor driver control output
80	I4	O	C	Motor driver control output
81	HOME	I		Home position detection output
82	VDCONT	O	C	VD control output
83	SPCONT	O	C	Spindle control output
84	DCONT	O	C	Driver power ON output
85	XSYSRST	O	C	Reset output
86	ADENA	O		Reference voltage supply output for A/D
87	DSP	I		Disk detection timing input
88	XTESTIN	I		Unit check start input
89,90	KEYIN2,1			Key sense
91	VDSENS	I		VD short detection input
92	DISK			Disk/No disk sense, 8/12cm detection
93	ELVPVO	I		Slide voltage input for ELV detection
94	ELVREF	I		ELV reference voltage input
95	TRP	I		Tray position input
96	AVSS			Analog ground
97	TEMP	I		Temperature detection input
98	VREF	I		Reference voltage input
99	AVCC			Analog power supply
100	RFSLC	O	C	TA1254AF data latch

*PD5642A

Format	Meaning
C	C MOS



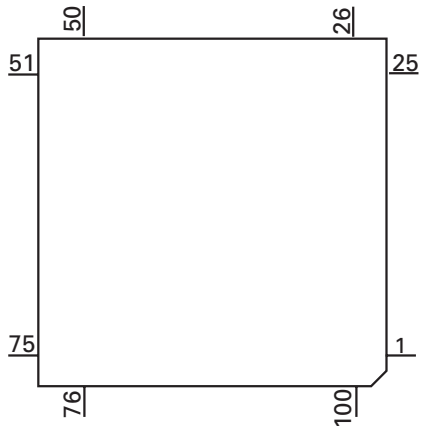
● **Pin Functions (TC9461F)**

Pin No.	Pin Name	I/O	Function and Operation
1	VSS		GND
2	BCK	O	Bit clock (1.4122MHz) output
3	AOUT	O	Audio data output terminal
4	DOUT	O	Digital out output terminal
5	MBOV	O	Buffer memory over signal output terminal
6	IPF	O	Augment flag output terminal
7	SBOK	O	CRCC decision result output terminal of subcode Q data
8	CLCK	I/O	Clock output/input terminal for subcode P-W data reading
9	VDD		Positive power supply terminal
10	VSS		GND
11	DATA	O	Subcode P-W data output terminal
12	SFSY	O	Play group frame synchronous signal output terminal
13	SBSY	O	Subcode block synchronous output signal
14	SPCK	O	Clock output terminal for processor status signal reading
15	SPDA	O	Processor status signal output terminal
16	COFS	O	Correct group frame clock (7.35 kHz) output terminal
17	MONIT	O	LSI internal signal monitor terminal
18	VDD		Positive power supply terminal
19	TESIO0	I	Test input/output terminal
20	P2VREF		2VREF terminal for PLL group only
21	SPDO	O	VCO center frequency shift terminal
22	PDOS	O	Phase error signal output terminal of EFM signal and PLCK signal
23	PDO	O	Phase error signal output terminal of EFM signal and PLCK signal
24	TMAXS	O	TMAX detection result output terminal
25	TMAX	O	TMAX detection result output terminal
26	LPFN	I	Inverted input terminal of low-pass filter amplifier
27	LPFO	O	Output terminal of low-pass filter amplifier
28	PVREF		VREF terminal for PLL group only
29	VCOREF	I	VCO center frequency reference level terminal
30	VCOF	O	Filter terminal for VCO
31	AVSS		Analog group ground
32	SLCO	O	Output terminal for data slice level generator DAC
33	RFI	I	RF signal input terminal
34	AVDD		Analog group power supply terminal
35	RFCT	I	RFRP signal center level input terminal
36	RFZI	I	Input terminal for RFRP zero cross
37	RFRP	I	RF ripple signal input terminal
38	FEI	I	Focus error signal input terminal
39	SBAD	I	Sub beam summing signal input terminal
40	TSIN	I	Test input terminal
41	TEI	I	Tracking error input terminal
42	TEZI	I	Input terminal for tracking error zero cross
43	FOO	O	Focus equalizer output terminal
44	TRO	O	Tracking equalizer output terminal
45	VREF		Analog reference power supply terminal
46	RFGC	O	RF amplitude adjustment control signal output terminal
47	TEBC	O	Tracking balance control signal output terminal
48	FMO	O	Feed equalizer output terminal
49	FVO	O	Speed error or Feed search EQ output terminal
50	DMO	O	Disk equalizer output terminal
51	2VREF		Analog reference power supply terminal
52	SEL	O	APC circuit ON/OFF signal output terminal
53	FLGA	O	External flag output terminal for internal signal monitor
54	FLGB	O	External flag output terminal for internal signal monitor
55	FLGC	O	External flag output terminal for internal signal monitor
56	FLGD	O	External flag output terminal for internal signal monitor
57	VDD		Digital power supply terminal
58	VSS		Digital GND
59-62	IO0-3	I/O	General purpose I/O port

Pin No.	Pin Name	I/O	Function and Operation
63	/DMOUT	I	A terminal for setting the mode to output binary PWM for a feed equalizer from I/O terminals 0 and 1, and binary PWM for disc equalizer from I/O terminal 2 and 3
64	/CKSE	I	X'tal select terminal
65	/DACT	I	Test terminal
66	TESIN	I	Test input terminal
67	TESIO1	I	Test input/output terminal
68	VSS		Digital GND
69	PXI	I	DSP group clock oscillation circuit input terminal
70	PXO	O	DSP group clock oscillation circuit input terminal
71	VDD		Digital power supply terminal
72	XVSS		Ground terminal for system clock oscillation circuit
73	XI	I	System clock oscillation circuit input terminal
74	XO	O	System clock oscillation circuit output terminal
75	XVDD		Power supply terminal for system clock oscillation circuit
76	DVDD		D/A converter power supply terminal
77	RO	O	R channel data positive rotation output terminal
78	DVSS		D/A converter analog ground terminal
79	DVR		D/A converter reference voltage terminal
80	LO	O	L channel data positive rotation output terminal
81	DVDD		D/A converter power supply terminal
82-84	TEST1-3	I	Test terminal
85-88	BUS0-3	I/O	Data input/output terminal for microcomputer interface
89	VDD		Digital power supply terminal
90	VSS		Digital GND
91	BUCK	I	Clock input terminal for microcomputer interface
92	/CCE	I	Chip enable signal input terminal for microcomputer interface
93	TEST4	I	Test terminal
94	/TSMOD	I	Local test mode select terminal
95	/RST	I	Reset signal input terminal
96	TEST0	I	Test terminal
97	/HSO	O	Play speed mode flag output terminal
98	/UHSO	O	
99	EMPH	O	Emphasis flag output terminal of subcode Q data
100	LRCK	O	Channel clock (44.1 kHz) output terminal

/UHSO	/HSO	Play speed
H	H	Once speed play
H	L	Twice speed play
L	H	Four times speed play
L	L	Eight times speed play

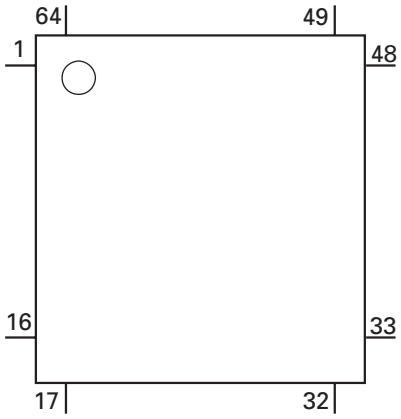
*TC9461F



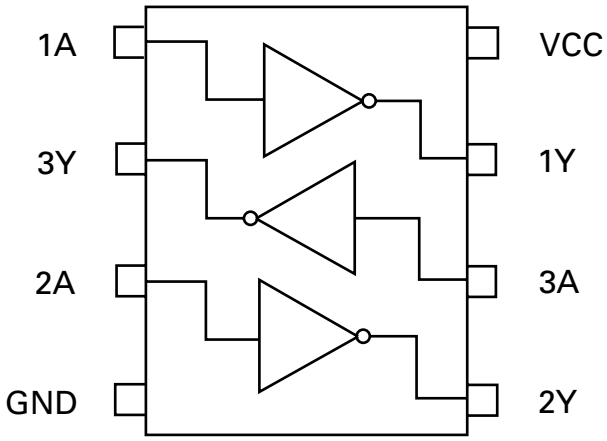
● **Pin Functions (LC89513KP)**

Pin No.	Pin Name	I/O	Function and Operation
1	VSS		GND
2-8	RA0-6	O	Address signal output
9	VSS		GND
10-16	RA7-13	O	Address signal output
17	VSS		GND
18	$\overline{RA13}$	O	Address signal output
19	$\overline{RCS}$	O	Chip select
20	$\overline{RWE}$	O	Drata write signal
21	$\overline{ROE}$	O	Data read signal
22	$\overline{RESET}$	I	Reset input
23	XTALCK	I	Oscillator input
24	VDD		Power supply
25	C2PO	I	C2 pointer input
26	BCK	I	Serial data clock input
27	SDATA	O	Serial data output
28	LRCK	I/O	44.1kHz strobe input
29	RS	I	Register select signal input
30	$\overline{RD}$	I	Data read signal input
31	$\overline{WR}$	I	Data write signal input
32	$\overline{CS}$	I	Chip select
33	VSS		GND
34-41	D0-7		CPU data signal
42	PSRAM	I	SRAM select
43	$\overline{INT}$	O	Interrupt request signal output
44	DRQ	O	DRQ signal output
45-48	HD0-3	O	Data output
49	VSS		GND
50-53	HD4-7	O	Data output
54	$\overline{HRD}$	I	Data reading request input
55	$\overline{DTEN}$	O	Data enable output
56	VDD		Power supply
57-64	IO0-7		Data buffer RAM data signal

*LC89513KP



TC7WU04FU



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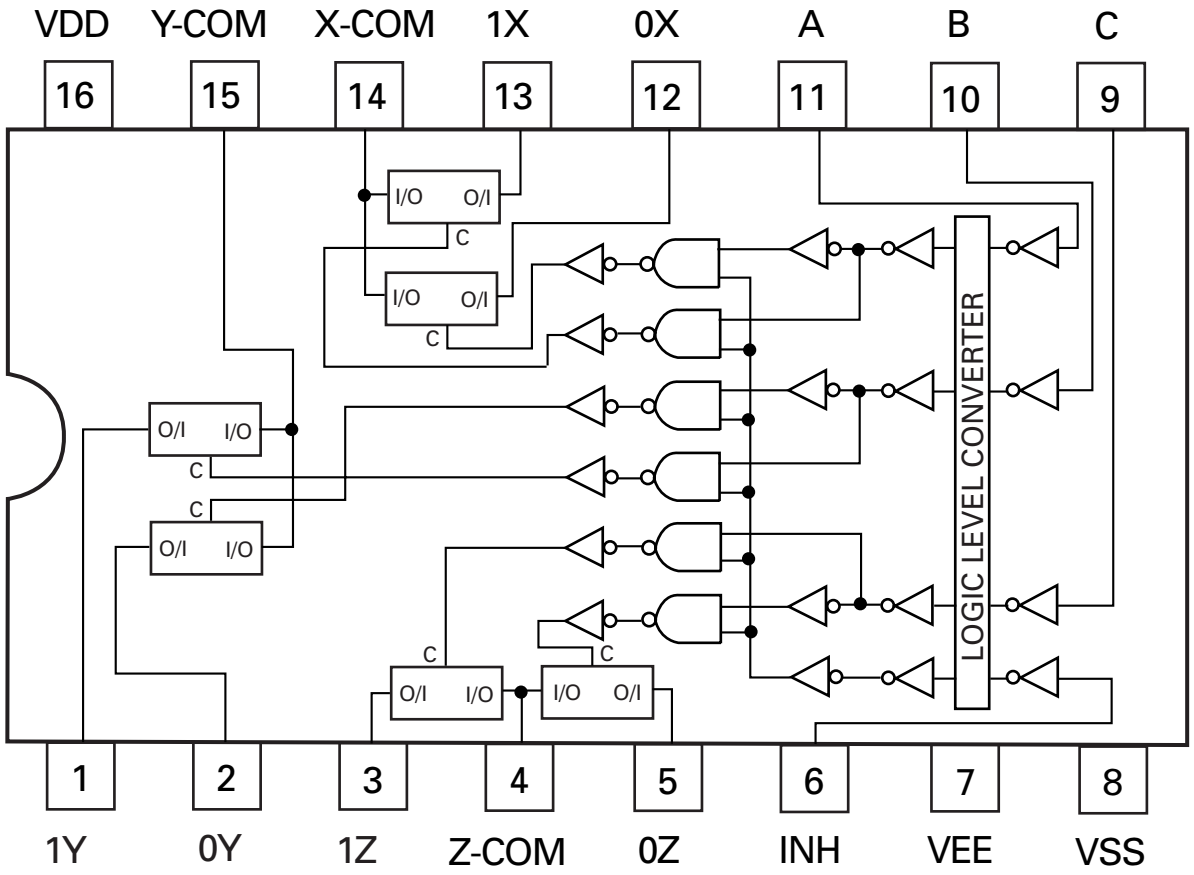

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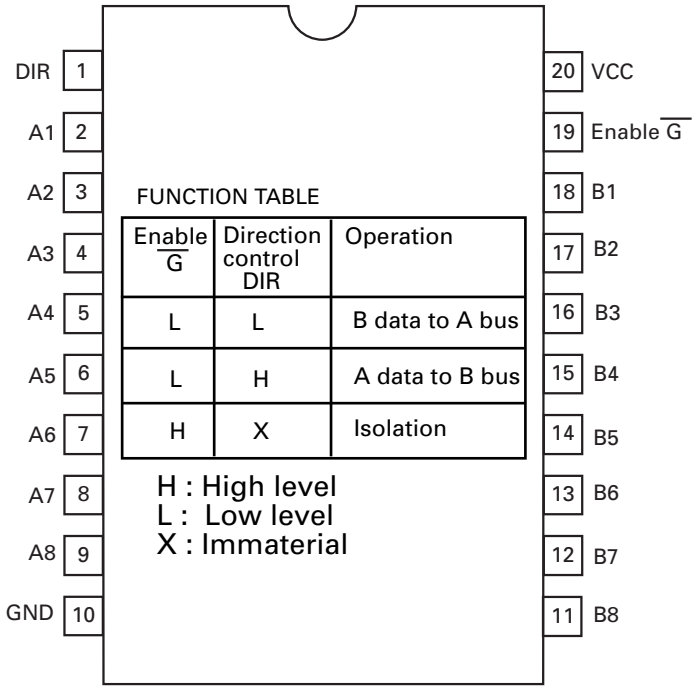
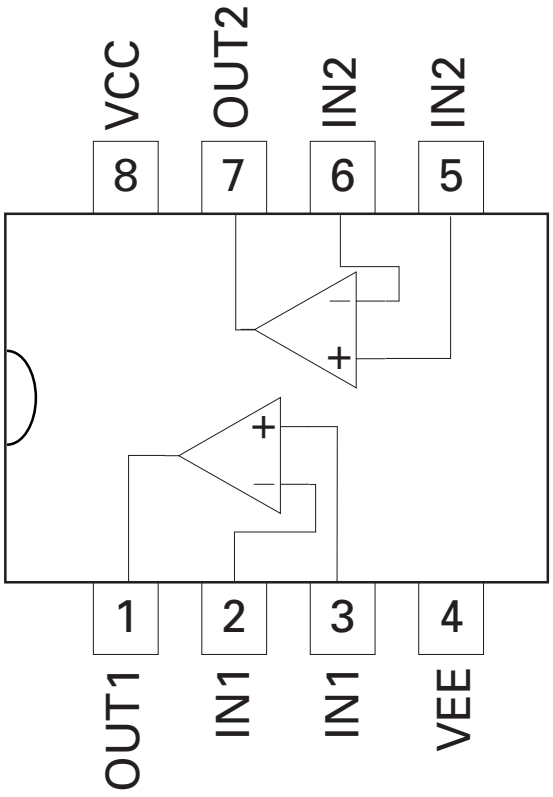


FUNCTION TABLE

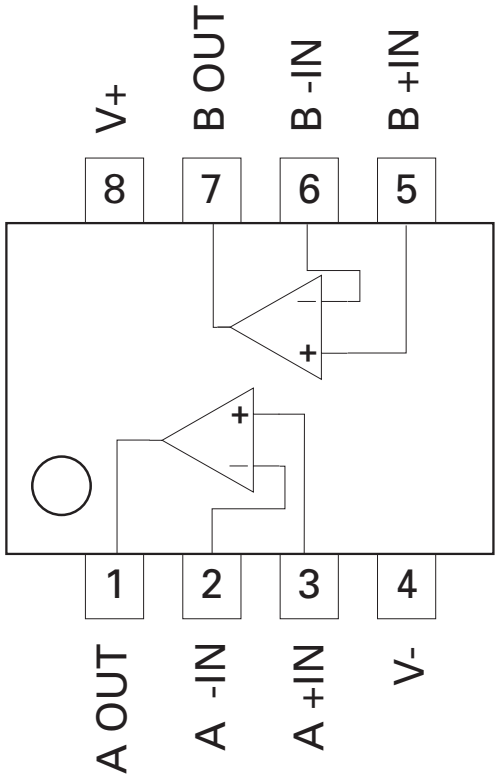
Enable $\overline{G}$	Direction control DIR	Operation
L	L	B data to A bus
L	H	A data to B bus
H	X	Isolation

H : High level
L : Low level
X : Immaterial

MC33202D



NJM3414AV



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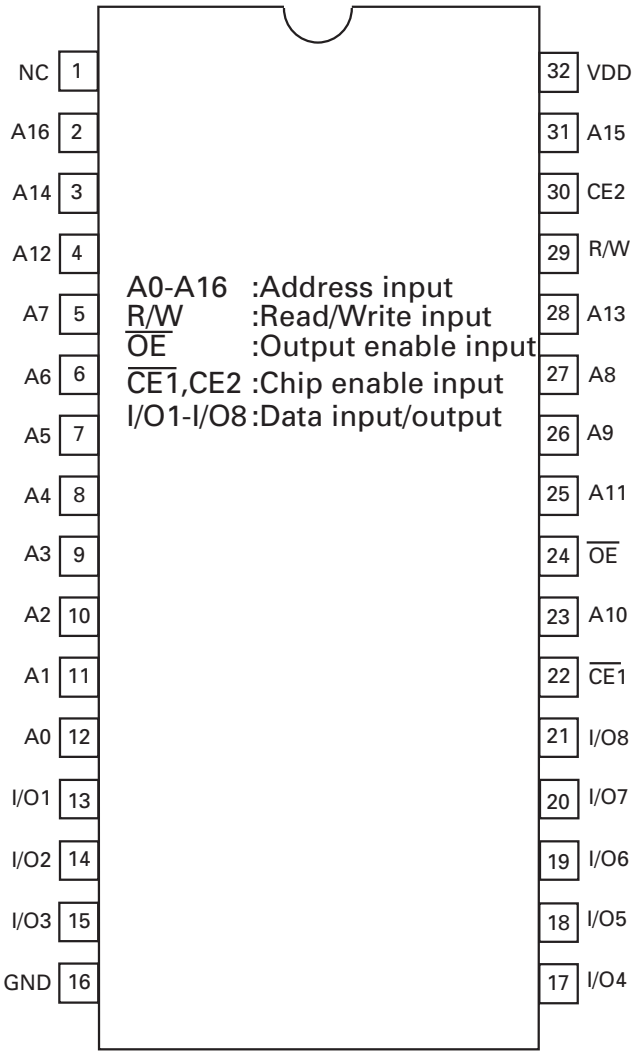

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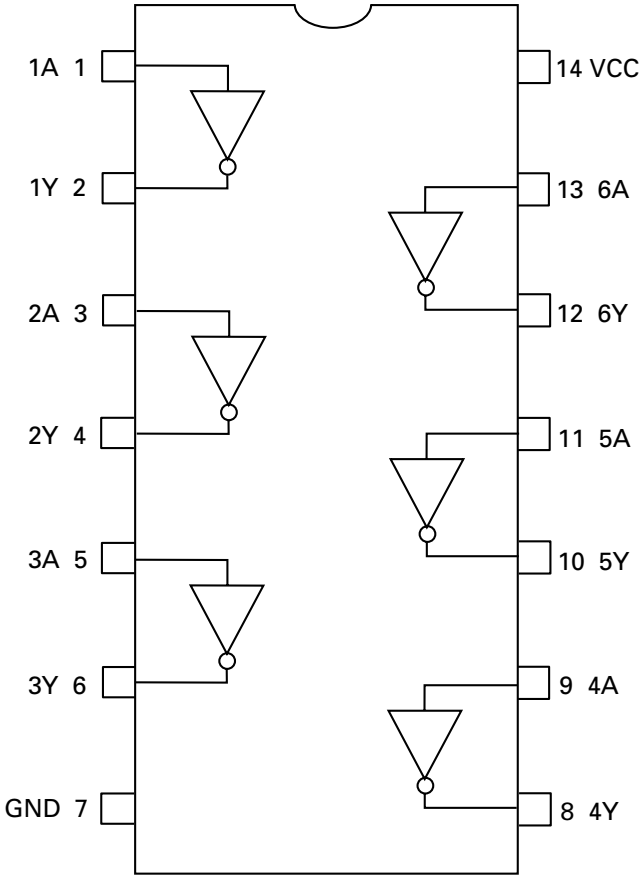

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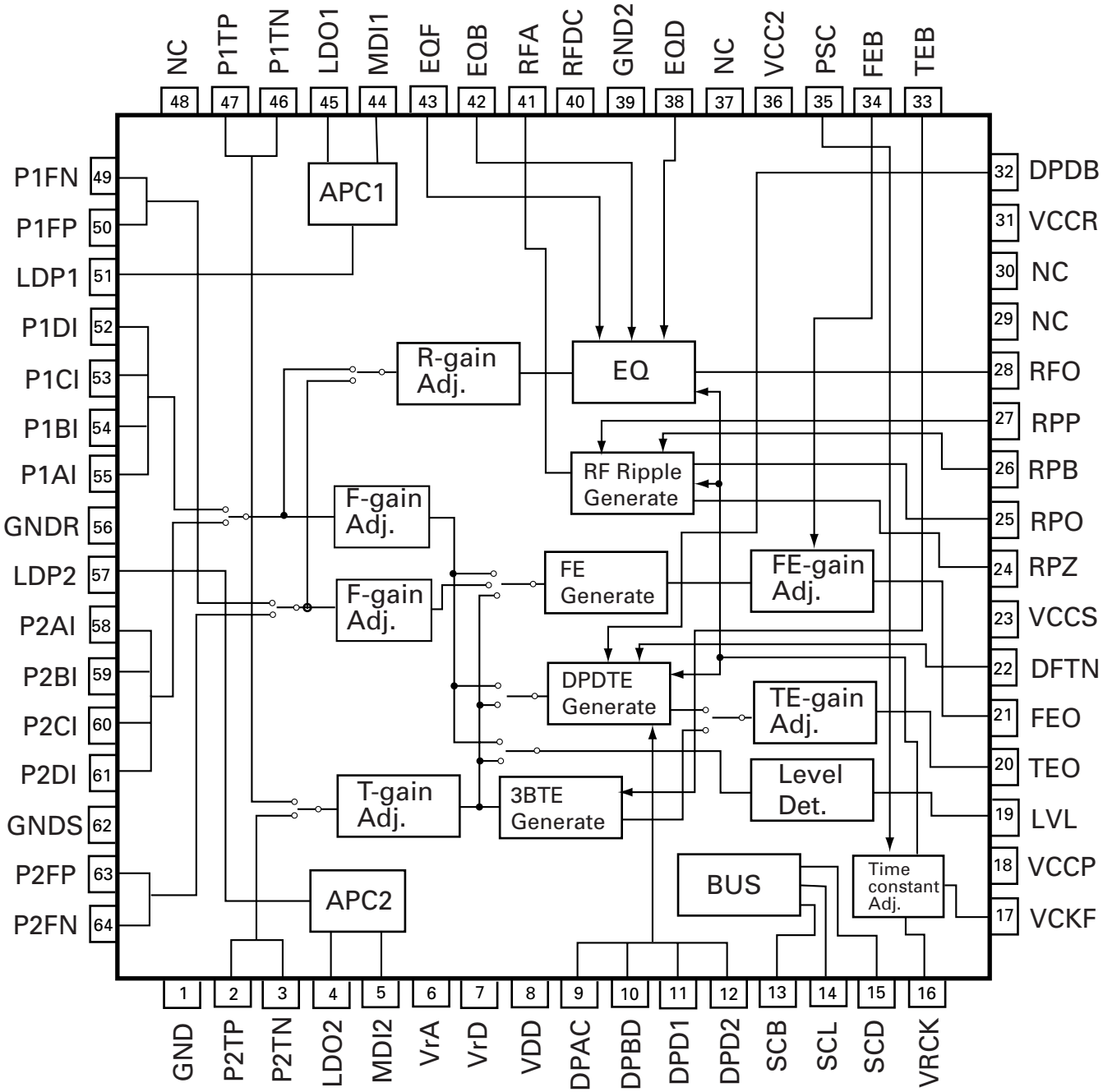
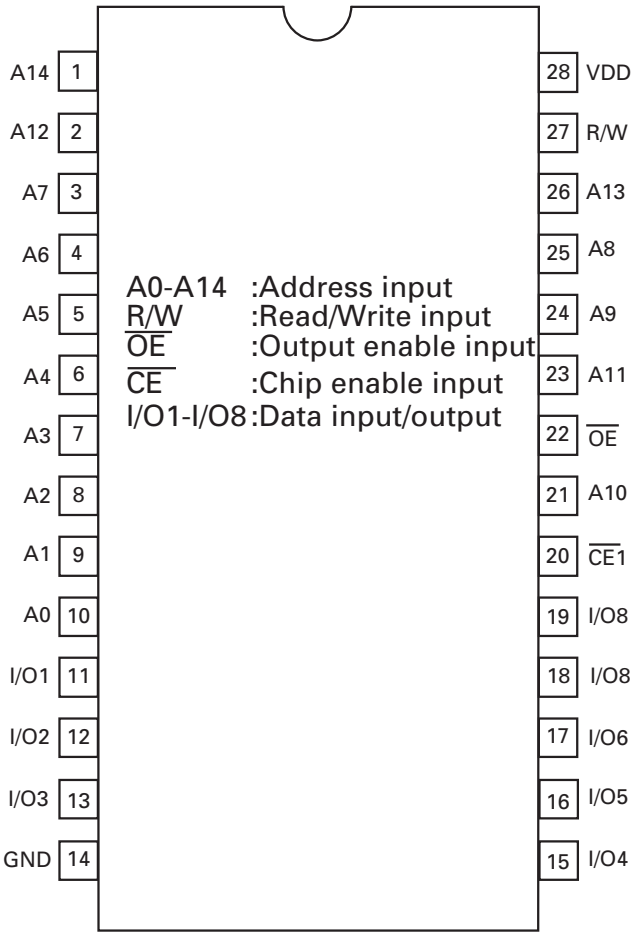

NC 48
P1TP 47
P1TN 46
LDO1 45
MDI1 44
EQF 43
EQB 42
RFA 41
RFDC 40
GND2 39
EQD 38
NC 37
VCC2 36
PSC 35
FEB 34
TEB 33
P1FN 49
P1FP 50
LDP1 51
P1DI 52
P1CI 53
P1BI 54
P1AI 55
GNDR 56
LDP2 57
P2AI 58
P2BI 59
P2CI 60
P2DI 61
GNDS 62
P2FP 63
P2FN 64
DPDB 32
VCCR 31
NC 30
NC 29
RFO 28
RPP 27
RPB 26
RPO 25
RPZ 24
VCCS 23
DFTN 22
FEO 21
TEO 20
LVL 19
VCCP 18
VCKF 17
APC1
R-gain Adj.
EQ
RF Ripple Generate
F-gain Adj.
F-gain Adj.
FE Generate
FE-gain Adj.
DPDTE Generate
TE-gain Adj.
Level Det.
T-gain Adj.
3BTE Generate
BUS
Time constant Adj.
APC2
GND 1
P2TP 2
P2TN 3
LDO2 4
MDI2 5
VrA 6
VrD 7
VDD 8
DPAC 9
DPBD 10
DPD1 11
DPD2 12
SCB 13
SCL 14
SCD 15
VRCK 16

*TC55257DFTI-85L



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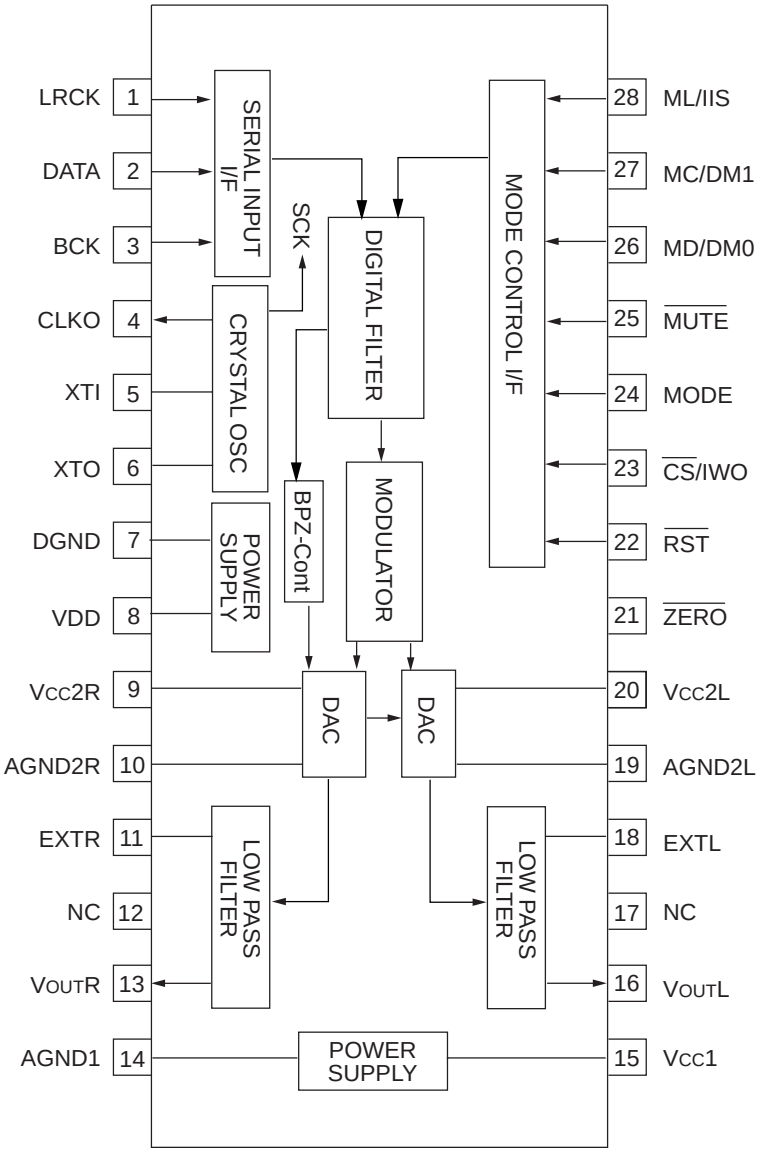

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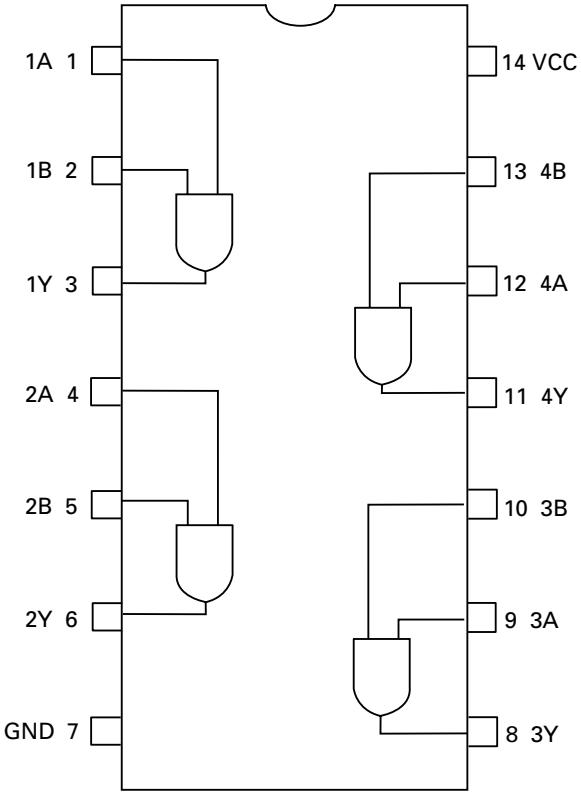

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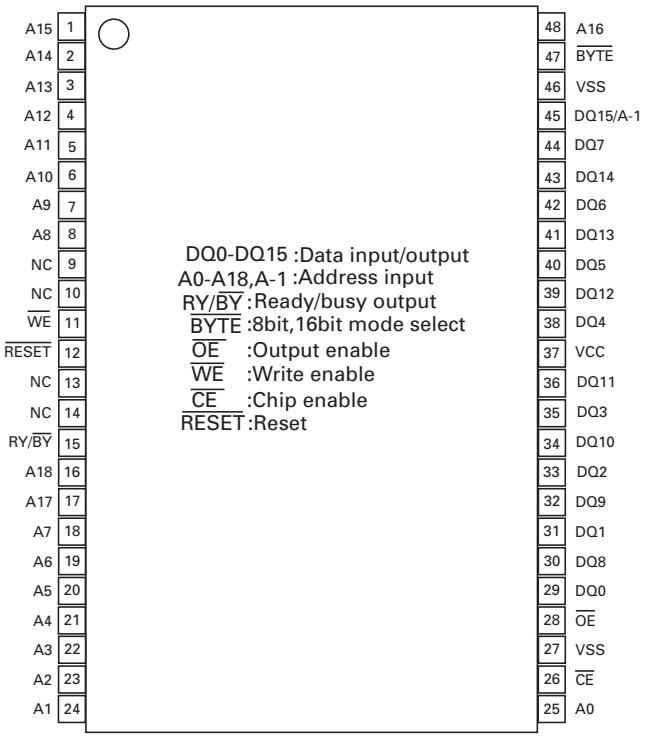

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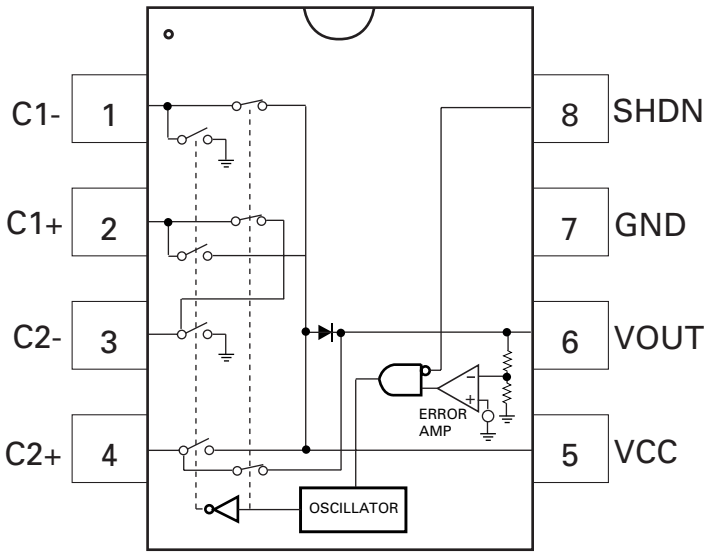

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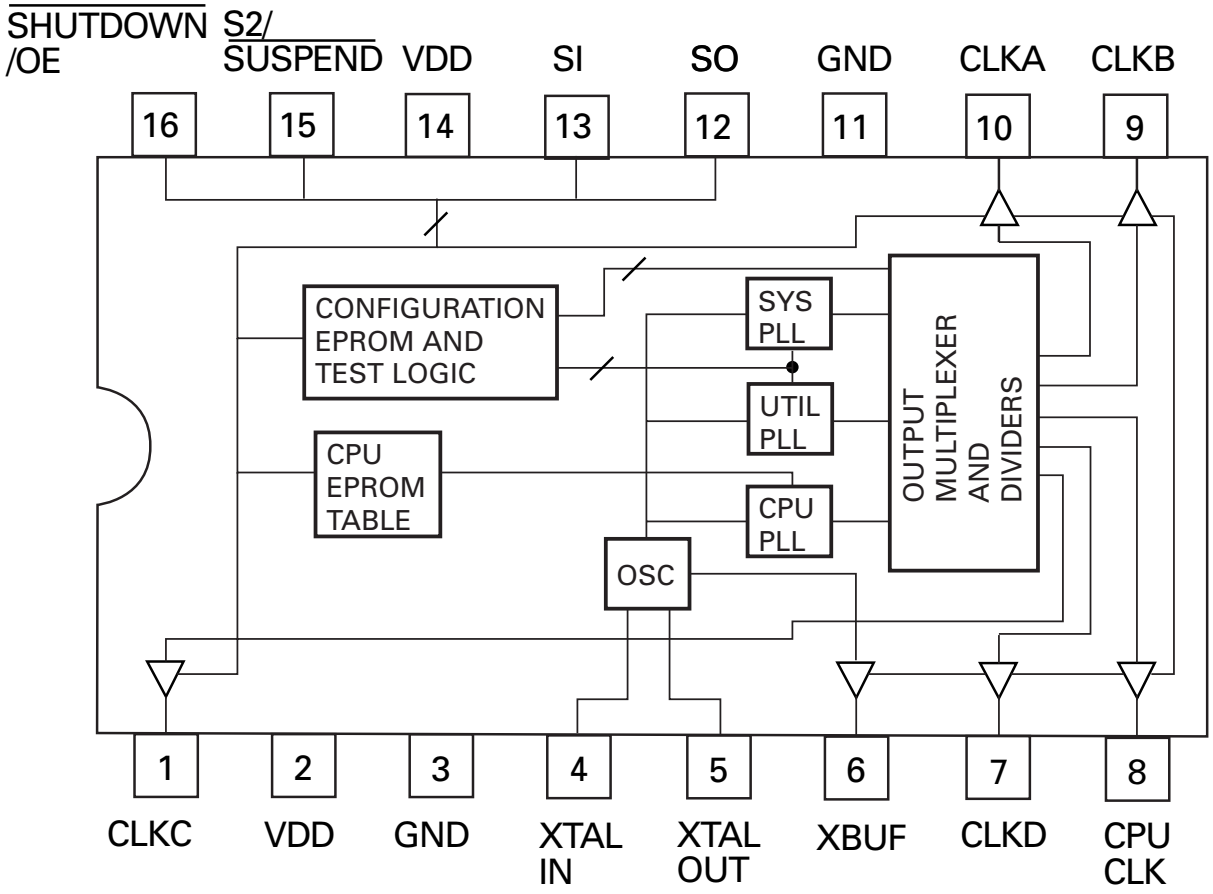


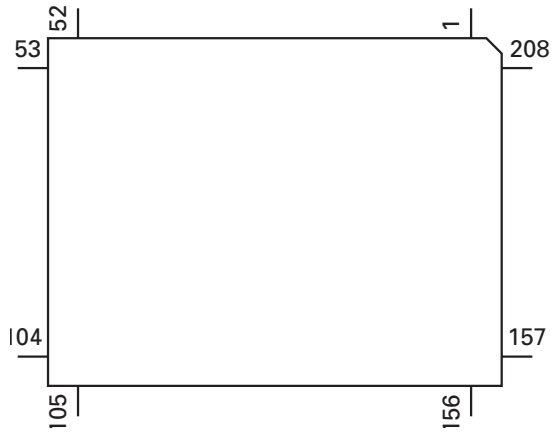
● **Pin Functions (MB86373BPFV-G-BI)**

Pin No.	Pin Name	I/O	Function and Operation
1	CLKSEL	I	ON/OFF signal of PLL
2	DIGCPN7	O	Digital component signal output
3	VSS		GND
4-9	DIGCPN6-1	O	Digital component signal output
10	VDD		2.5V Power supply
11	DIGCPN0	O	Digital component signal output
12	RBSEL	O	Cb, Cr identification signal of during digital component signal output
13	XHS	O	Horizontal synchronizing output signal
14	XVS	O	Vertical synchronizing output signal
15	VSS		GND
16	XRESET	I	Reset
17	XLDCSYNC	I	External synchronizing signal input (LD mode)
18	KEY	O	KEY signal for LD, OSD overlay (LD mode)
19	PD	O	Phase comparing result output signal of horizontal synchronous
20	VFLD	O	Field discrimination signal of digital signal output
21-25	DIGCOMP9-5	O	Digital composite signal output
26	VSS		GND
27	VDD		2.5V Power supply
28-32	DIGCOMP4-0	O	Digital composite signal output
33	DACK	O	27MHz clock output terminal
34	NC		Not used
35	VSSA3		GND (D/A converter)
36	ANAC	O	Analog color (C) output signal
37	VDDA3		2.5V power supply (internal D/A converter only)
38	VSSA2		GND (D/A converter)
39	ANAY	O	Analog brightness (Y) output signal
40	VDDA2		2.5V Power supply (internal D/A converter only)
41	VREF	I	Reference voltage for D/A converter
42	VRO	O	D/A converter inner current set terminal
43	VDDA4		2.5V Power supply (internal D/A converter only)
44	VSSA1		GND (D/A converter)
45	ANACOMP	O	Analog composite output terminal
46	VDDA1		2.5V Power supply (internal D/A converter only)
47	BF	O	Burst flag signal
48	XBLK	O	H/V complex blanking signal
49	TEST4	O	Open
50	VSS		GND
51	TEST0	I	Open
52	TEST1	I	Test terminal
53	DAIIN	I	External input digital data input (SPDIF)
54	CDDATA	I	External input audio data input (for CD)
55	CDLR	I	External input data channel clock input (for CD)
56	CDBCK	I	External input data clock input (for CD)
57-59	AODATA3-1	O	Audio decode data
60	VSS		GND
61	VDD		2.5V Power supply
62	AODATA0	O	Audio decode data
63	AOPCM	O	Digital audio interface output
64	AODAI	O	Digital audio interface output
65	LRCK	O	Data channel clock for D/A, digital filter
66	AOMCK	O	Master clock for D/A, digital filter
67	BCK	O	Bit clock for D/A, digital filter
68,69	TEST2,3	I	open
70	NC		Not used
71	XDSPRST	I	Open
72	VSS		GND
73	TEST5	O	Open
74-77	NC		Not used
78	SD7	I	Parallel data input
79	VDD		2.5V Power supply

Pin No.	Pin Name	I/O	Function and Operation
80-84	SD6-2	I	Parallel data input
85	VSS		GND
86,87	SD1,0	I	Parallel data input
88	XERR	I	Error input signal
89	XSACK	I	Acknowledge signal
90	XTEST	I	Test terminal
91	SREQ	O	Data request signal
92-95	HADRS10-7	I	CPU address bus signal
96	VSS		GND
97	VDD		2.5V Power supply
98-102	HADRS6-2	I	CPU address bus signal
103-106	HDATA15-12	I/O	CPU data bus signal
107	VSS		GND
108-113	HDATA11-6	I/O	CPU data bus signal
114	VDD		2.5V Power supply
115-118	HDATA5-2	I/O	CPU data bus signal
119	VSS		GND
120,121	HDATA1,0	I/O	CPU data bus signal
122	BUSSEL	I	Bus width select signal
123	XOSDACK	I	OSD data acknowledge signal
124	XOSDREQ	O	OSD data request signal
125,126	HCPUSEL1,0	I	CPU select signal
127-129	XINT3-1	O	Interruption request signal to CPU
130	VSS		GND
131	VDD		2.5V Power supply
132	XINT0	O	Interruption request signal to CPU
133	XEXTRDY	O	Acknowledge signal to CPU
134	HRW	I	CPU read/write signal
135	HCLKIN	I	Host clock input
136	XHCS	I	LSI chip select signal
137	XHAS	I	CPU address status
138-141	XHBE3-0	I	CPU byte enable signal
142	VSS		GND
143	MDRADR4	O	Address signal for SDRAM
144	MDRADR3	O	Address signal for SDRAM
145	MDRADR5	O	Address signal for SDRAM
146	MDRADR2	O	Address signal for SDRAM
147	VDD		2.5V Power supply
148	VSS		GND
149	MDRADR6	O	Address signal for SDRAM
150	MDRADR1	O	Address signal for SDRAM
151	MDRADR7	O	Address signal for SDRAM
152	MDRADR0	O	Address signal for SDRAM
153	MDRADR8	O	Address signal for SDRAM
154	VSS		GND
155-158	TEST6-9	I	Test terminal
159	MDRADR10	O	Address signal for SDRAM
160	MDRADR9	O	Address signal for SDRAM
161	MDRADR11	O	Address signal for SDRAM
162	XMDRCS	O	Chip select signal for SDRAM
163	MDRCKE	O	Clock enable signal for SDRAM
164	VSS		GND
165	VDD		2.5V Power supply
166	XMDRRAS	O	RAS signal for SDRAM
167	MDRCLK	O	Clock output signal for SDRAM
168	VSS		GND
169	MDRCLKIN	I	Clock input signal for SDRAM
170	XMDRCAS	O	CAS signal for SDRAM

Pin No.	Pin Name	I/O	Function and Operation
171	XMDRDQM1	O	Input mask/output enable signal for SDRAM
172	VSS		GND
173	XMDRWE	O	Write enable signal for SDRAM
174	XMDRDQM0	O	Input mask/output enable signal for SDRAM
175	MDRDAT8	I/O	Data bus signal for SDRAM
176	VSS		GND
177	MDRDAT7	I/O	Data bus signal for SDRAM
178	MDRDAT9	I/O	Data bus signal for SDRAM
179	MDRDAT6	I/O	Data bus signal for SDRAM
180	MDRDAT10	I/O	Data bus signal for SDRAM
181	MDRDAT5	I/O	Data bus signal for SDRAM
182	VSS		GND
183	VDD		2.5V Power supply
184	MDRDAT11	I/O	Data bus signal for SDRAM
185	MDRDAT4	I/O	Data bus signal for SDRAM
186	MDRDAT12	I/O	Data bus signal for SDRAM
187	MDRDAT3	I/O	Data bus signal for SDRAM
188	MDRDAT13	I/O	Data bus signal for SDRAM
189	VSS		GND
190	MDRDAT2	I/O	Data bus signal for SDRAM
191	MDRDAT14	I/O	Data bus signal for SDRAM
192	MDRDAT1	I/O	Data bus signal for SDRAM
193	MDRDAT15	I/O	Data bus signal for SDRAM
194	MDRDAT0	I/O	Data bus signal for SDRAM
195	VSS		GND
196	NC		Not used
197	ICK27M	I	System clock output
198	VSS		GND
199	OCK27M	O	System clock input
200	VSSA		GND (VCO only)
201	VDDA		2.5V Power supply (VCO only)
202	ILPF	O	PLL section inverter output for audio
203	MLPF	I	PLL section inverter input for audio
204	OLPF	O	Phase detector output for audio
205	OVCO	I	VCO input for audio clock
206	VSS		GND
207	XPLLRST	I	PLL section reset signal
208	XSYNCRST		Connect to VDD

*MB86373BPFV-G-BI

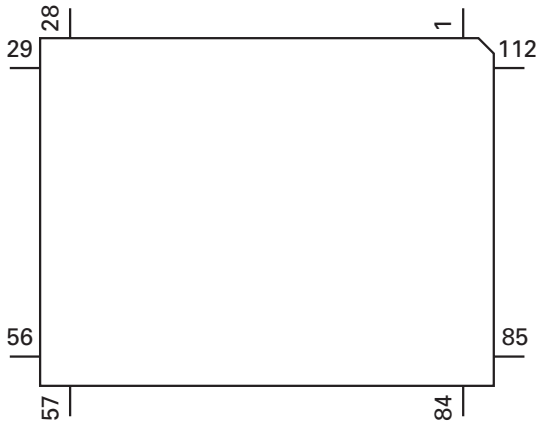


● **Pin Functions (PD3411A)**

Pin No.	Pin Name	I/O	Function and Operation
1	PB14	I	MY-Chip interruption #1
2	PB15	I	AV Chip interruption #0
3	VSS		GND
4-11	AD0-7	I/O	Data bus
12	VSS		GND
13,14	AD8,9	I/O	Data bus
15	VCC		Power supply terminal
16-21	AD10-15	I/O	Data bus
22	VSS		GND
23-30	A0-7	O	Address bus
31	VSS		GND
32-39	A8-15	O	Address bus
40	VSS		GND
41,42	A16,17	O	Address bus
43	VCC		Power supply terminal
44-47	A18-21	O	Address bus
48	CS0		Not used
49	CS1		CARNET 4 chip select
50	CS2		External memory area chip select
51	CS3		MY-Chip chip select
52	VSS		GND
53	PA0		DVD EDC error detection
54	PA1		Flash ROM write enable
55	PA2		AV Chip chip select
56	PA3		External wait input
57	PA4		Low Byte write pulse
58	PA5		High Byte write pulse
59	PA6		Read pulse
60	PA7		Serial data latch pulse
61	VSS		GND
62	PA8	I	Audio output last step mute
63	PA9	I	RS-232 ready for sending output
64	PA10	I	AV Chip interruption #1
65	PA11	I	Communication response to BUS microcomputer
66	PA12	O	DMA CH0 transfer request
67	PA13	I	DMA CH0 transfer request
68	PA14	O	DMA CH0 transfer request
69	PA15	I	DMA CH0 transfer request
70	VCC		Power supply terminal
71	CK	O	Not used
72	VSS		GND
73	EXTAL	I	Clock oscillator
74	XTAL	I	Clock oscillator
75	VCC		Power supply terminal
76	NMI	I	Not used
77	VCC		Power supply terminal
78	WDTOVF		Not used
79	RES	I	Chip enable of after power on
80-82	MD0-2	I	Mode 2
83,84	VCC		Power supply terminal
85	AVCC		Power supply terminal
86	AVREF		Power supply terminal
87-89	PC0-2		Not used
90	PC3	I	Data lead enable
91	AVSS		GND
92	PC4	I	V field discrimination signal input
93	PC5	I	Test mode entry
94	PC6	I	Communication request from BUS microcomputer
95	PC7	I	Request of RS-232 ready for communicating

Pin No.	Pin Name	I/O	Function and Operation
96	VSS		GND
97	PB0	I	STEP 2 DMA transfer DREQ
98	PB1	I	Power supply terminal
99	VCC		Power supply terminal
100	PB2	I	Transfer end interruption
101	PB3	I	AV Chip interruption #2
102	PB4	I	STEP 2 receive interruption
103	PB5	I	STEP 2 transmit interruption #1
104	PB6	I	CARNET4 chip select
105	PB7	I	CARNET4 chip power
106	VSS		GND
107	PB8	I	Serial bus data input
108	PB9	I	Serial bus data output
109	PB10	I	RS232C RxD
110	PB11	I	RS232C TxD
111	PB12	I	Serial bus clock input/output
112	PB13	I	MY-Chip interruption #0

*PD3411A



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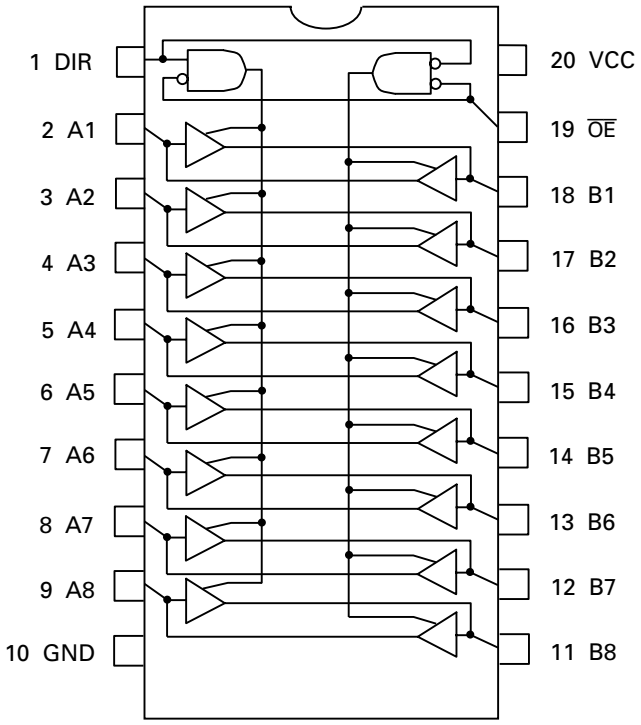

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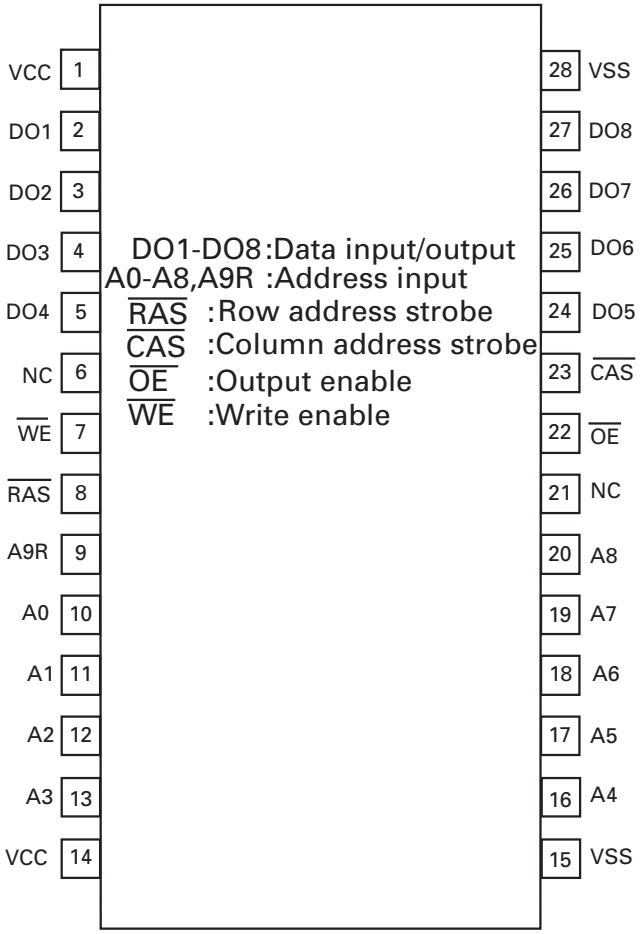

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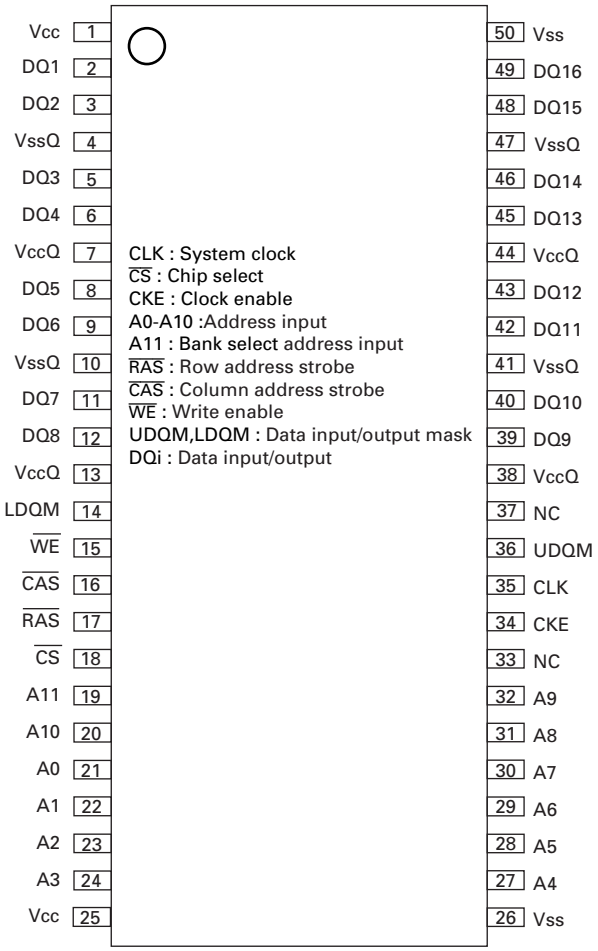

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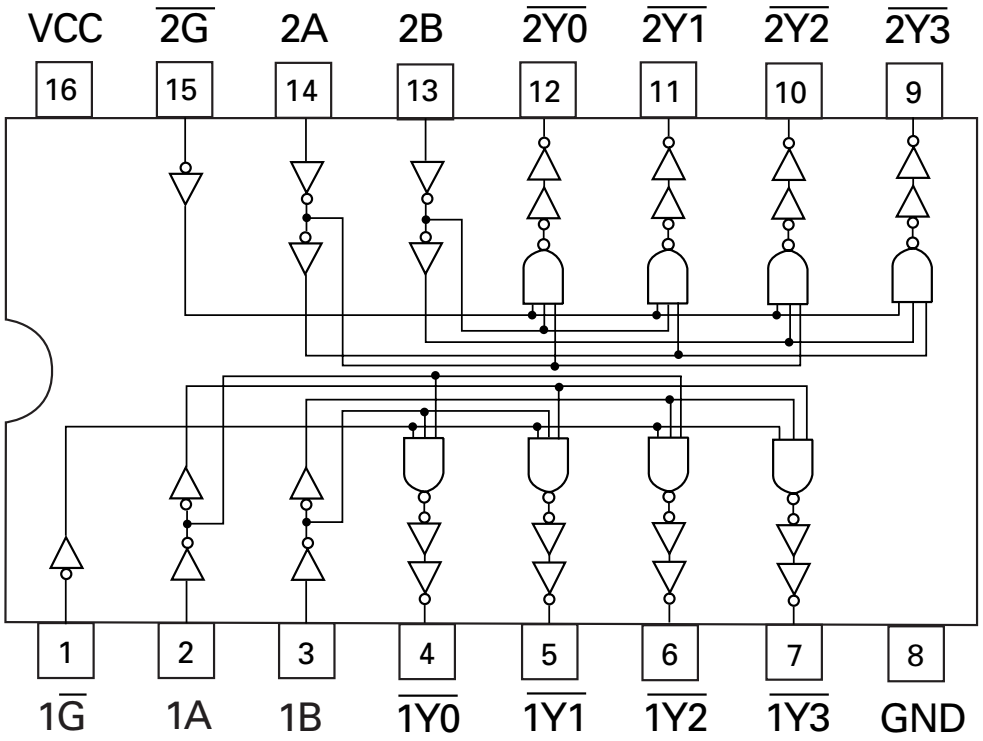


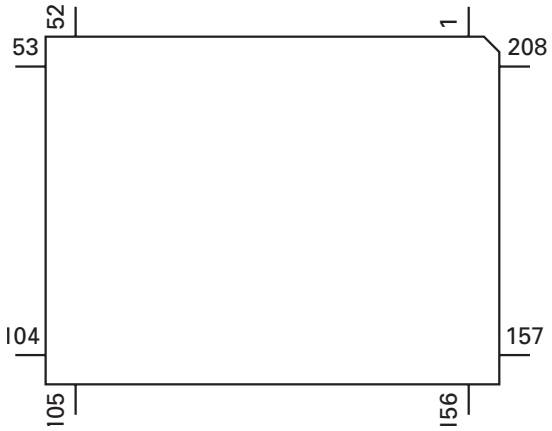
● **Pin Functions (PD4995A)**

Pin No.	Pin Name	I/O	Function and Operation
1,2	GND		Digital circuit GND
3	NC		Not used
4	DXTLI	I	27MHz crystal connection terminal which oscillates reference clock signals of the spindle and PLL
5	DXTLO	O	Not used
6	BUNRI	I	Separation test control terminal for internal RAM
7	TSTSTB	I	Test mode setting input
8	PC2/STB	I/O	Not used
9	PC3/BSYNC	I/O	Not used
10	PC4/SELNED	I	I/O setting terminals for NED (7:0), STM and BSYNC terminals
11	PA7/NED7	I/O	Not used
12	PA6/NED6	I/O	Not used
13	PA5/NED5	I/O	Not used
14	PA4/NED4	I/O	Not used
15	VDD		Digital circuit power supply
16	GND		Digital circuit GND
17	PA3/NED3	I/O	Not used
18	PA2/NED2	I/O	Not used
19	PA1/NED1	I/O	Not used
20	PA0/NED0	I/O	Not used
21	BMODE1	I	Sets which test is done in the test mode
22-25	DD7-4	I/O	DRAM data bus for VBR buffer
26	GND		Digital circuit GND
27	VDD		Digital circuit power supply
28-31	DD3-0	I/O	DRAM data bus for VBR buffer
32	XDCAS	O	DRAM CAS signal for VBR buffer
33	XDWE	O	DRAM WE signal for VBR buffer
34	XDOE	O	DRAM OE signal for VBR buffer
35	XDRAS	O	DRAM RAS signal for VBR buffer
36-38	DA12-10	O	Not used
39-41	DA9-7	O	DRAM address signal for VBR buffer
42	GND		Digital circuit GND
43	VDD		Digital circuit power supply
44-50	DA6-0	O	DRAM address signal for VBR buffer
51,52	GND		Digital circuit GND
53	VDD		Digital circuit power supply
54	XWR	O	Not used
55	XSACK	O	Transfer response terminal for VIDEO_DMA channel
56	SREQ	I	Data transfer request terminal for VIDEO_DMA channel
57-60	SDATA0-3	O	Data output bus for VIDEO=DMA channel
61	GND		Digital circuit GND
62	VDD		Digital circuit power supply
63-66	SDATA4-7	O	Data output bus for VIDEO=DMA channel
67	XAVTRM	O	Signal indicating the head of the sector of the transfer data for VIDEO_DMA channel
68	BMODE2	I	Sets which test is done in the test mode
69	DMACKI	I	System clock input of DVD/CD ROM data
70	GND		Digital circuit GND
71	DMACKO	O	Outputs reference crystal clock signals of the spindle and PLL
72	XSCL1	I	Chip select signal from the main CPU
73	XSWAIT	O	WAIT output to the main CPU
74	XSRD	I	RD signal for the main CPU
75	XSWR	I	WR signal for the main CPU
76	XSDREQ	O	DMA request for the main CPU
77	SDACK	I	DMA response signal
78	VDD		Digital circuit power supply
79	GND		Digital circuit GND
80-91	SA11-0	I	Main CPU address
92-95	SAD7-4	I/O	Main CPU data bus
96	VDD		Digital circuit power supply
97	GND		Digital circuit GND
98-101	SAD3-0	I/O	Main CPU data bus

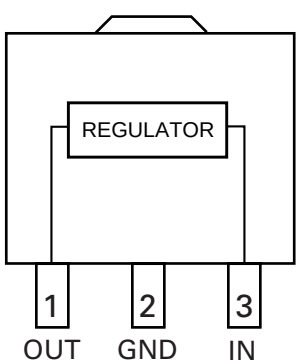
Pin No.	Pin Name	I/O	Function and Operation
102,103	XIRQ10,11	O	Interrupt request for the main CPU
104	VDD		Digital circuit power supply
105,106	GND		Digital circuit GND
107	CKCD	I	Master clock of audio I/F block
108	DIFOUT	O	Digital audio output
109	BCK	O	Bit clock output to DAC
110	LRCK	O	LRCK signal output to DAC
111	ADATAO	O	Serial data output to DAC
112	CDDT	I	Audio data input from CD decoder
113	CDLR	I	LRCK signal input from CD decoder
114	CDBCK	I	Bit clock input from CD decoder
115	CDDO	I	Digital out signal input from CD decoder
116	C2FI	I	Input terminal for the C2 error flag from CD decoder
117	WFCK	I	CD frame clock signal
118	SCOR	I	CD subcode sync input terminal
119	SBSO	I	CD subcode data input terminal
120	EXCK	O	Shift clock which generates the timing at which data is sent to the SBSO terminal
121	VDD		Digital circuit power supply
122	GND		Digital circuit GND
123	DSPA0	O	Not used
124	DSPA1	O	Not used
125	DSPA2	O	Not used
126	ASDATA0/PB0	I/O	Not used
127	ASDATA1/PB1	I/O	Not used
128	ASDATA2/PB2	I/O	Not used
129	ASDATA3/PB3	I/O	Not used
130	VDD		Digital circuit power supply
131	GND		Digital circuit GND
132	ASDATA4/PB4	I/O	Not used
133	ASDATA5/PB5	I/O	Not used
134	ASDATA6/PB6	I/O	Not used
135	ASDATA7/PB7	I/O	Not used
136	XAWR	O	Not used
137	ASREQ	I	Transfer request terminal for AUDIO_DMA channel
138	TMC2	I	Terminal test control terminal
139	ASTB	I	Strobe signal indicating that address information is provided in the address data bus (7:0) of the sub CPU
140	XMCS	I	Chip select signal from the sub CPU
141	XIRQ2	O	Interrupt request for the sub CPU
142	XMWR	I	Sub CPU WR signal
143	XMRD	I	Sub CPU RD signal
144	MAD7/PE7	I/O	Connected to the multiplex bus of the sub CPU address data
145	MAD6/PE6	I/O	Connected to the multiplex bus of the sub CPU address data
146	MAD5/PE5	I/O	Connected to the multiplex bus of the sub CPU address data
147	MAD4/SA16/PE4	I/O	Connected to the multiplex bus of the sub CPU address data
148	GND		Digital circuit GND
149	VDD		Digital circuit power supply
150	MAD3/SA15/PE3	I/O	Connected to the multiplex bus of the sub CPU address data
151	MAD2/SA14/PE2	I/O	Connected to the multiplex bus of the sub CPU address data
152	MAD1/SA13/PE1	I/O	Connected to the multiplex bus of the sub CPU address data
153	MAD0/SA12/PE0	I/O	Connected to the multiplex bus of the sub CPU address data
154	RPWM	O	Not used
155,156	GND		Digital circuit GND
157	VDD		Digital circuit power supply
158	RERR	O	Control output for rough servo
159	FPWM	O	7-bit PWM output terminal for FG servo
160	VPWM	O	5-bit PWM output terminal for velocity servo
161	PPWM	O	PWM output terminal for phase servo
162	FGPL	I	Rotational pulse input from the spindle motor
163	XASACK	O	Not used

Pin No.	Pin Name	I/O	Function and Operation
164	GND		Digital circuit GND
165	XRESET	I	Terminal for initializing the entire LSI system
166	AGND		GND for A/D converter
167	NC		Not used
168	VRB	I	Not used
169	AGND		GND for A/D converter
170	AIN	I	Analog RF signal input terminal to A/D converter
171	NC		Not used
172	VRC	I	Reference voltage input terminal for A/D converter
173	VRT	I	Not used
174,175	AVDD		Power supply for A/D converter
176	VDD		Digital circuit power supply
177	GND		Digital circuit GND
178	SEDI	I	Serial data input after BITABI decoding
179	SEDO	O	Serial data output after BITABI decoding
180	TMC1	I	Terminal test control terminal
181	VCOCLK	I	System clock signals of the spindle and demodulator
182	GND		Digital circuit GND
183	VDD		Digital circuit power supply
184	ASC	O	Outputs the frequency error of the sync cycle as a PWM pulse
185	APC	O	Outputs the phase error of the PLL as a PWM pulse
186	ATC	O	Outputs the DC error of the RF signal as a PWM pulse
187	AFC	O	Outputs the frequency errors of VCOCLK and reference clock as PWM pulses
188	BMODE3	I	Sets which test is done in the test mode
189	DUTY50	O	Outputs a duty 50% pulse at any time
190	FSX/STATUS4	I/O	Not used
191	EFLG/STATUS3	I/O	Not used
192	DMCK/RF_A	O	Reference clock input terminals of the spindle and PLL for DVD double-speed playback
193	GND		Digital circuit GND
194	ADD7/PD7	I/O	Not used
195	ADD6/PD6	I/O	Not used
196	ADD5/PD5	I/O	Not used
197	ADD4/PD4	I/O	Not used
198	ADD3/PD3	I/O	Not used
199	ADD2/PD2	I/O	Not used
200	ADD1/PD1	I/O	Not used
201	ADD0/PD0	I/O	Not used
202	BMODE0	I	Sets which test is done in the test mode
203	DEFECT	I	External defect signal input
204	T_DET	O	Not used
205	PC7/STATUS2	O	Not used
206	PC6/STATUS1	O	Not used
207	PC5/STATUS0	O	Not used
208	VDD		Digital circuit power supply

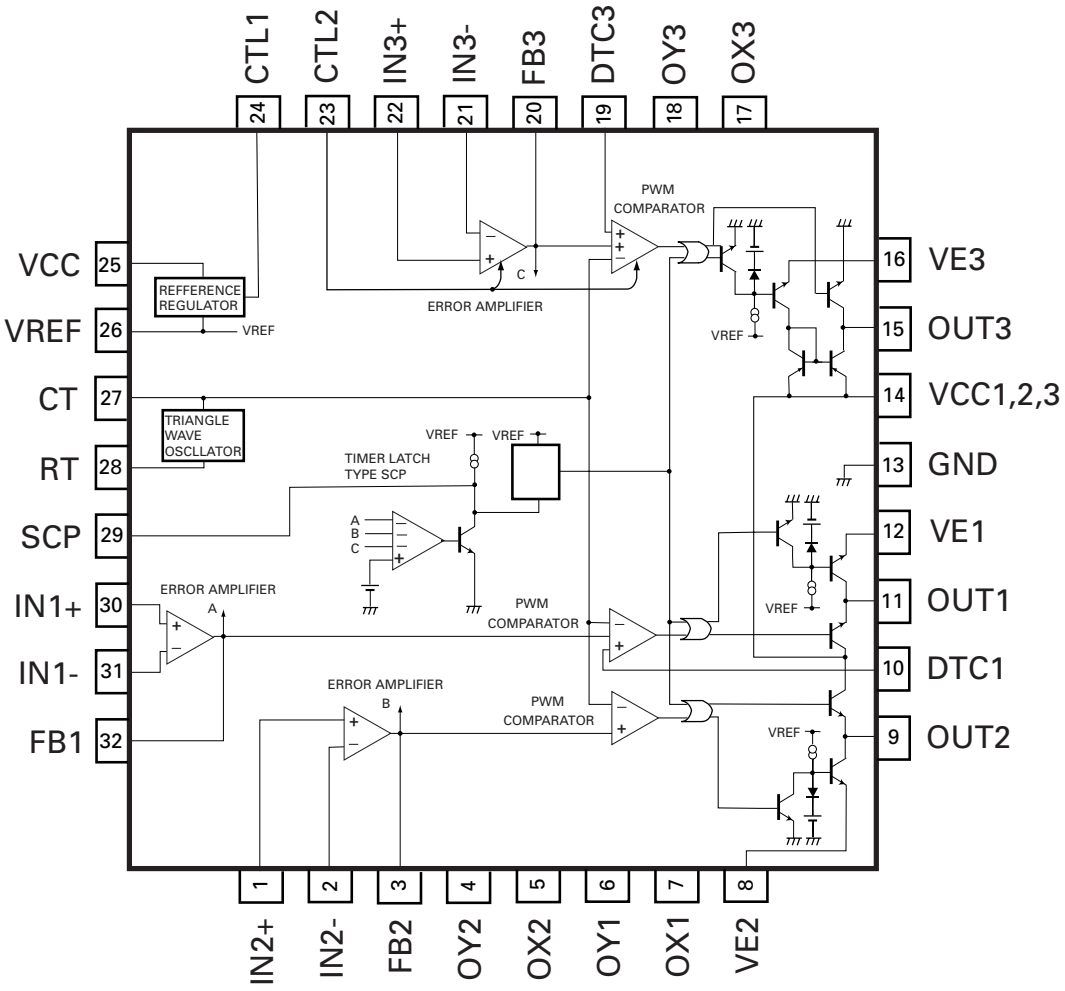
*PD4995A



HA178L05UA

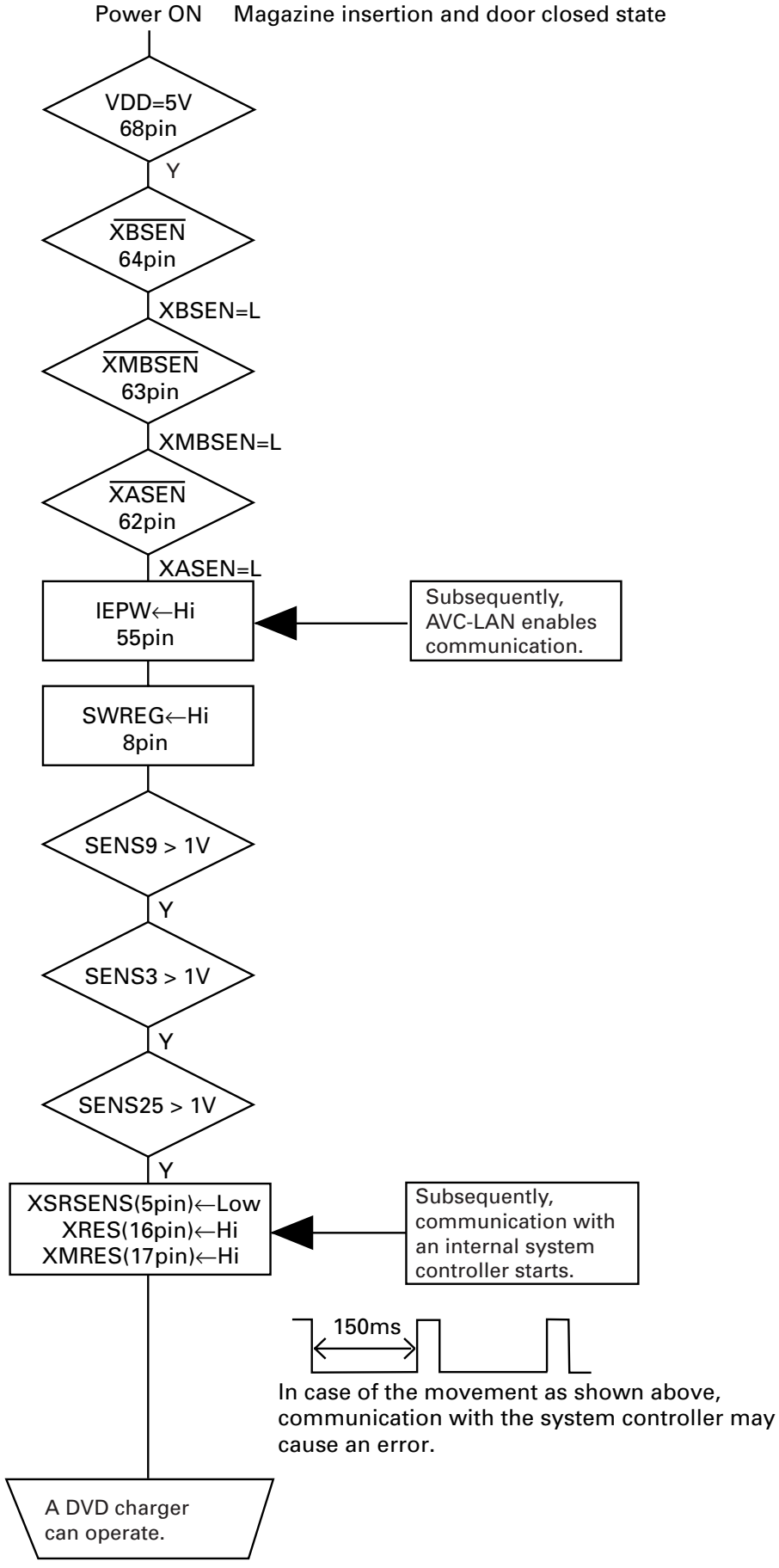


*BA9706K

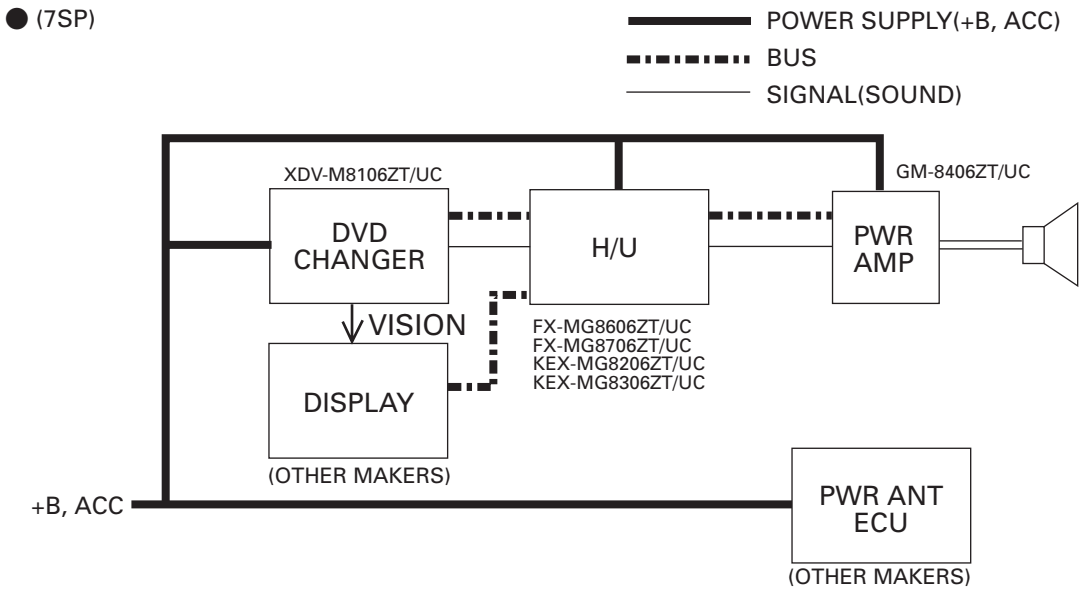

CTL1
CTL2
IN3+
IN3-
FB3
DTC3
OY3
OX3
24
23
22
21
20
19
18
17
PWM COMPARATOR
VCC
25
REFFERENCE REGULATOR
VREF
26
ERROR AMPLIFIER
C
VREF
16
VE3
CT
27
15
OUT3
TRIANGLE WAVE OSCLLATOR
VREF
VREF
14
VCC1,2,3
RT
28
TIMER LATCH TYPE SCP
13
GND
A
B
C
SCP
29
12
VE1
ERROR AMPLIFIER
A
IN1+
30
PWM COMPARATOR
VREF
11
OUT1
IN1-
31
10
DTC1
ERROR AMPLIFIER
B
PWM COMPARATOR
FB1
32
VREF
9
OUT2
1
2
3
4
5
6
7
8
IN2+
IN2-
FB2
OY2
OX2
OY1
OX1
VE2

7.3 EXPLANATION

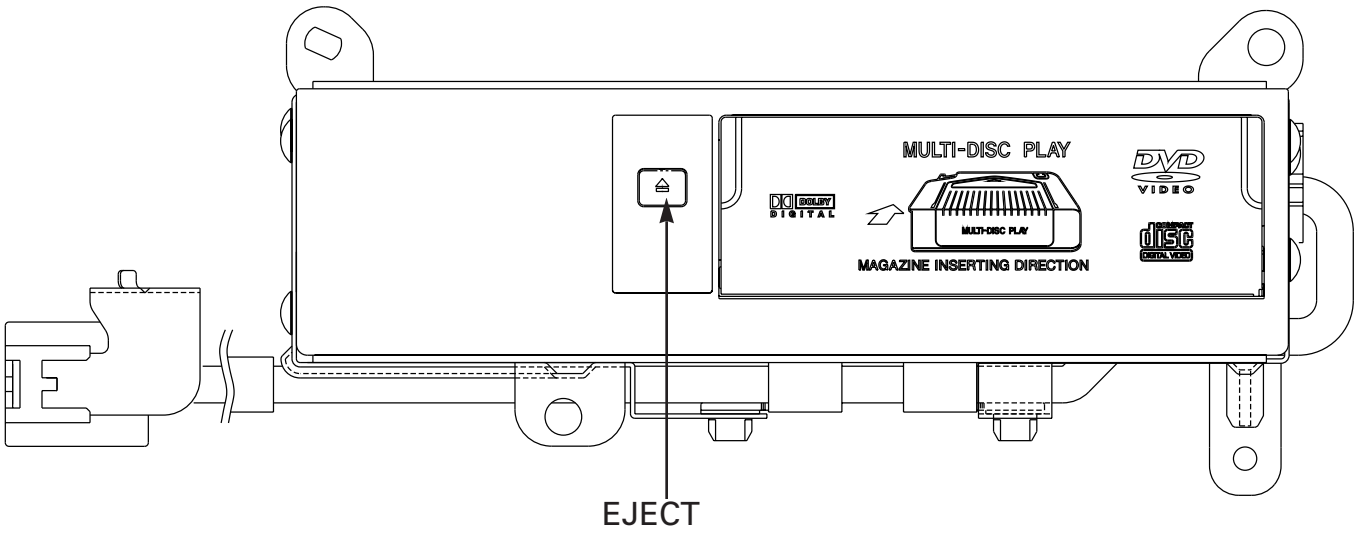
7.3.1 OPERATIONAL FLOW CHART



7.3.2 SYSTEM BLOCK DIAGRAM



8. OPERATIONS AND SPECIFICATIONS



● Specifications

General

System ..... DVD-Video, Video CD, Compact disc audio system
Usable discs .... DVD-Video, Video CD, Compact disc
Signal format
1.Linear PCM
..... Sampling frequency: 44.1/48/96 kHz
Number of quantization bits: 16/20/24; linear
2.Dolby digital
3.MPEG
Power source ..... 13.2 V DC (10.5 – 16.1 V allowable)
Grounding system ..... Negative type
Rated current ..... 1.0 A or less(DVD regenerate)
Region Number
..... 1
Electrode dark current.....5mA or less

Audio

Frequency response ..... ±1.5dB(20Hz,20kHz)
Signal-to-noise ratio
..... 80dB or more
Residual distortion ..... 0.1% or less
Output Level ..... 1000 mV (1 kHz, 0 dB)
Number of channels ..... 2 (stereo)
Max. output power supply .....2Vrms±2dB
Separation.....65dB or more
The difference between right output and left output
.....1.5dB or less

Player

Weight ..... 2680 g

Video

Output level ..... 1000 mVp-p±0.2 V/75 Ω

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